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ABSTRACT

This document consists of a curriculum guide combined with separately published "Simulations" and "Test Bank" volumes designed to support instructors using the curriculum guide. The curriculum guide for "business computer applications I" provides office education instructors with detailed units of instruction correlated directly to the essential elements mandated by the Texas Education Agency. The 13 units are divided into 6 sections that may be considered as the instructor's guide for the units. The following are section topics: introduction to business computer applications I, word processing, electronic spreadsheets, database management, computer communication tools, and social implications of computer usage. A final section provides a closure and includes a review. Components of each section are as follows: (1) essential elements covered in the section; (2) suggested unit lesson plan that consists of the objective page, content outline, suggested teacher activities (general teacher preparation, teacher presentation, reteach activities, specific teaching activities); (3) handouts; (4) transparencies; (5) activity and competency test matrices; (6) competency tests; (7) answers to activities and competency tests; (8) list of resources; and (9) competency checklist. The unit pages are considered the student guide and include objectives/competencies, focus, terminology list, unit overview, and learning activities. Appendixes have the following contents: reference addresses, office education course descriptions, office education essential elements, suggested equipment list, suggested plan and format for lesson plan development, course competency checklist, suggested modifications for special needs, information on the 2+2+2 articulation project, and supplementary unit for Section I. (YLB)

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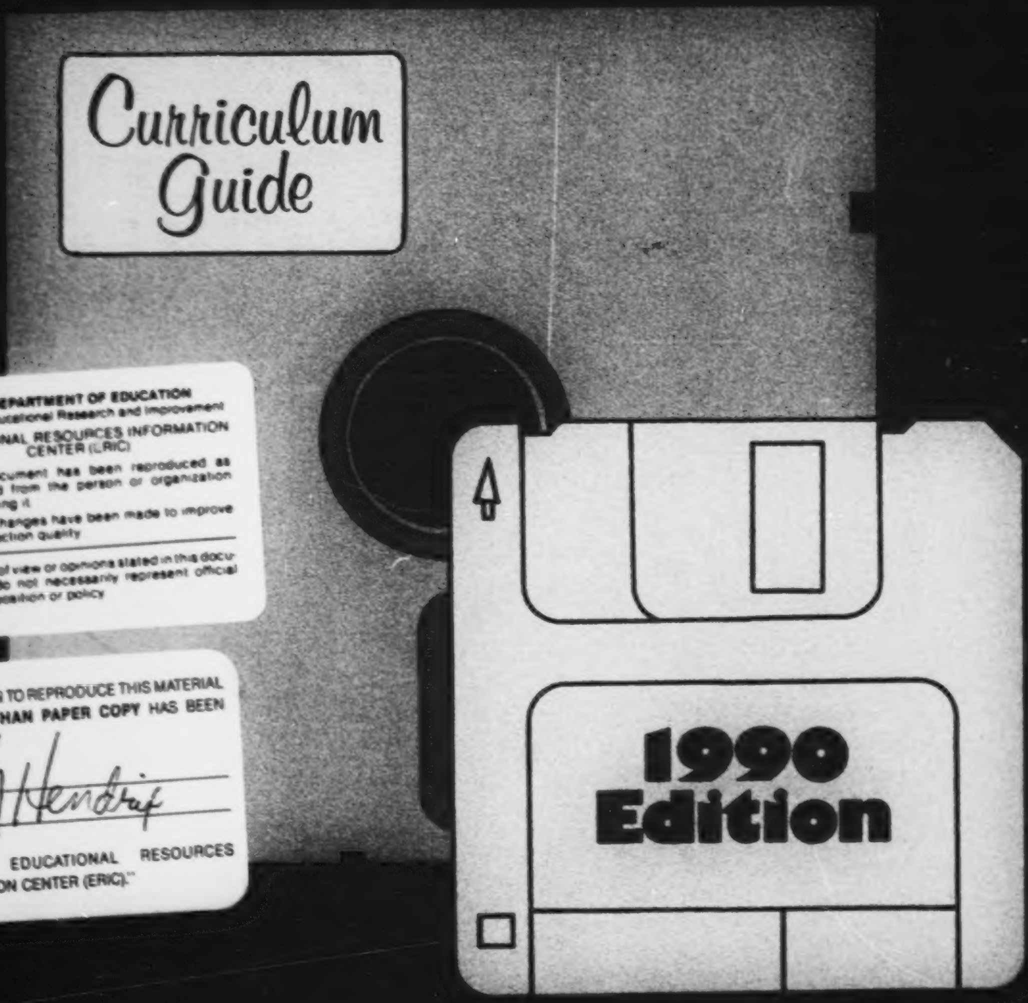
BUSINESS COMPUTER APPLICATIONS I



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CURRICULUM GUIDE

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PREFACE

The curriculum for Business Computer Applications I was prepared to provide quality instructional materials for instructors of business computer applications courses in Texas. This guide serves as a basis for achieving the office education essential elements mandated by the Texas Education Agency.

This curriculum guide has been developed through a joint effort of the Texas Education Agency and the Educational Development and Training Center located on the campus of East Texas State University in Commerce, Texas.

The purpose of developing this guide is to provide office education instructors with a comprehensive curriculum guide that includes detailed units of instruction correlated directly to the essential elements. Suggestions and comments concerning this curriculum guide are requested and should be sent to the curriculum specialist at the Educational Development and Training Center.

ORGANIZATION AND UTILIZATION OF THE CURRICULUM GUIDE

Each instructional unit in the office education *Business Computer Applications I* curriculum guide is correlated to the essential elements. The basic components of the guide are the section pages which are considered the instructor's guide, the unit pages which are considered the student guide, and the appendices which are a collection of useful, pertinent information.

SECTION PAGES

Each section may be considered as the instructor's guide for the units that are covered within that section. The section provides the instructor with an opportunity to plan and prepare in advance for each unit in the section. The following are the components of the section.

Essential Elements

The specific essential elements covered in the section are provided.

Suggested Unit Lesson Plan

The suggested unit lesson plan consists of several elements. It is designed to serve as a basis for the preparation of daily and weekly lesson plans and to serve as a basic curriculum outline for each essential element.

The Objective Page. Consists of the section and unit titles, essential elements, suggested number of hours, unit objective, student competencies, focus, domains and basic skills statements. It is designed to provide the teacher with data to use in daily and/or weekly lesson plans.

The Content Outline. Is a broad outline of the contents of the overview. It is designed to give the teacher a preview of the major emphasis of the unit.

The Suggested Teacher Activities. These suggested activities are basic areas that the teacher needs to address for every unit. The suggested teacher activities consists of several sections:

(1) The **General Teacher Preparation** activities suggest general considerations for unit preparation for all units. This section is the same for each unit.

(2) The **Teacher Presentation** includes setting the stage for the student for optimum classroom learning to take place. This section is the same for each unit.

(3) The **Reteach Activities** are presented so that they may be used with any unit. This section is the same for each unit.

(4) The **Specific Teaching Activities** component is extremely important, because it permits the teacher to have materials prepared in advance for the unit being

introduced. Specific suggestions may be made as to bulletin boards, equipment needed, guest speakers, field trips, and materials or supplies that are needed. In addition, special instructions are provided for some of the activities and tests in the unit.

Activity/Competency Test Matrices for Domains and Basic Skills

Two matrices are provided for the teacher, listing which domains and basic skills the activities and competency test parts cover. This information may be used for better lesson planning.

Competency Tests

Evaluation is most successful when objectives are clearly stated in advance of learning experiences. The evaluation should be used to measure students' attainment of those specific competencies. Competency tests allow the instructor to make a judgment about student progress in relation to a predetermined standard. These standards should reflect those established by the business community for entry-level employees. It is important that students understand the criteria that are used to evaluate their competency in a given subject area.

Written competency tests based on the unit and student competencies are provided for each unit. These tests are provided to measure the students' understanding of the information covered in the unit overview. The parts of the competency test are queued to the essential elements and student competencies covered in the unit. Individual test items may be used as a pretest measure, as a review, or as an oral quiz to assist the teacher in spotting difficulties being encountered by students in their efforts to accomplish the unit objective. The instructor should construct additional test items for any objectives and information added to the unit. Other information on student evaluation is included in Appendix E--*Steps in Lesson Plan Development*.

The evaluation instruments in this curriculum guide may be used in the following ways:

Individualized Instruction--after reading the unit overview or having taken notes from the instructor, the student may complete the activities after brief instructions are provided by the instructor. After successfully completing the activities, the student is then ready for the competency test. If the test results show a weakness in a specific portion of the unit, the student should review that portion of the unit overview, complete reteach activities provided by the instructor, and retake the test.

Group Instruction--after participating in classroom discussion and completing the student activities, the student should be able to demonstrate mastery of items listed in the competency checklist for the unit, located in the section. The competency test can be used to measure students' progress toward meeting these competencies.

Remedial and Reteach Instructions--students who demonstrate a poor understanding of the subject matter may need remedial help. Selected reteach activities are provided in the Suggested Teacher Activities in the Suggested Unit Lesson Plan.

Answers to Activities and Competency Tests

Answers are provided for the activities and competency tests included in the unit. Because of the diversified programs, equipment, teaching styles, and student backgrounds, some activities and test questions must be evaluated by the instructor of the course; therefore, no answers are provided.

Resources

A list of suggested resources is provided at the end of most units or sections. They include: textbooks, practice sets, software, and media. A list of reference addresses is provided in Appendix A.

Competency Checklists

A competency checklist is provided for each unit. The checklist can be used to assist the instructor in recording individual student progress toward the accomplishment of the unit competencies and in recording the mastery of the essential elements covered in that specific unit. Space has been provided to record progress for additional reteach activities and other assignments.

The checklists may be accumulated in a file and may serve as a portion of a student's competency profile. A cumulative course competency profile is found in Appendix F.

UNIT PAGES

The unit pages may be used in a wide variety of ways. Some suggested uses are:

(1) As a primary resource guide to get started for the beginning instructor.

(2) As an information base, along with additional textbook information, periodical supplements, and other background experiences.

(3) As an information base for students that may be reinforced with additional material and lectures.

Objectives/Competencies

The objective page states the goals of the unit, thus providing a sense of direction and accomplishment for both the student and the teacher. Two types of objectives are provided:

(1) Unit objectives, which state what the student would achieve upon completion of the unit.

(2) Student competencies, which state what the student is expected to do to assist himself/ herself in mastering the unit objective.

Each unit of instruction uses the "golden thread" approach. Each student competency is followed through in the unit overview, in the activities, in the competency test, and the competency profile. Generally, competency one corresponds to activity one and to the first part of the competency test. The "golden thread" approach allows the instructor to easily judge the student's mastery or nonmastery of each competency.

The competencies of the unit provide direction for the learning process; therefore, it is important for the instructor and the students to discuss the objectives prior to covering the information in the unit. This discussion will provide a common understanding between the instructor and student of the intent of the objectives.

It should be noted that when the essential elements were designed, they were only to be the minimum. Instructors should feel free to modify competencies to tailor the material to the needs of the students and the program. When competencies are added, corresponding information, activities, and evaluation should be designed and utilized.

Focus. A focus is provided for each unit. The focus tells "Why" the unit should be studied.

Terminology. A terminology list including definitions is provided, when appropriate, for most units.

Unit Overview. The unit overview is provided as a guide for instructors. It provides information that will specifically address the student competencies and, thus, the essential elements addressed. It should be noted that the overview is not designed as a total source, although it may be used that way. The unit overview is an attempt to condense available current information in order to provide content essential for meeting the cognitive (knowledge) objectives of the unit. The instructor will find that the unit overview serves as an excellent guide for presenting the background information necessary for developing any skills specified in the unit objective. Information may be presented in several ways:

(1) The instructor may use the unit overview as a guide for presenting the background knowledge necessary for students to complete the specific competencies and, ultimately, the unit objective; or

(2) Students may be allowed to use the unit overview as a basic text for a common information base. Information may be added through additional research or lecture notes.

Activities

Learning activities are keyed directly to the student competencies. They provide direction to study and also provide application and reinforcement of cognitive materials presented using the cognitive, psychomotor, and/or affective domains. An effort has been made to incorporate the following elements of the learning process: translation, interpretation, application, analysis, synthesis, and evaluation so that the learning styles of each student will be recognized.

The activity sheets may be given to the students for completion in class or may be used as homework assignments. Answers to the activities are included in the section pages for the individual unit.

The instructor should preview the activities prior to making student assignments to assure that information has been taught, and that all required supplies and equipment are available. Specific Teacher Activities are presented in the Suggested Unit Lesson Plan. Class time should be set aside for those activities that require group participation and other small group work projects. The instructor will need to develop methods by evaluating activities which require student participation.

APPENDICES

A wide variety of material is provided for the instructor in the appendices.

Appendix A: **Reference Addresses**

Provides the addresses for publishers, software vendors, microcomputer directories, electronic information services, magazines/periodicals/newsletters, services and reports, professional organizations, professional publications, and other business publications.

Appendix B: **Course Descriptions**

Provides a description of each of the office education courses.

Appendix C: **Office Education Essential Elements**

Provides a complete set of the office education essential elements.

Appendix D: **Suggested Equipment List**

Provides a suggested list of equipment and supplies for the course.

Appendix E: **Steps in Lesson Plan Development**

Provides the teacher with a suggested plan and format for developing lessons. In addition, it provides the teacher with Bloom's Taxonomy and suggested verbs to use with each level to achieve maximum results.

Appendix F: Course Competency Checklist

Provides the teacher with a competency checklist for the entire course which includes levels of student achievement, for the entire course.

Appendix G: Special Needs

Provides the teacher with suggested ways of modifying the office education curriculum for handicapped students. It also includes a section on determining students' learning styles.

Appendix H: 2+2+2 Articulation Project

Provides the teacher with information on the 2+2+2 program and provides a DACUM chart illustrating what responsibilities are needed for the business computer field.

Appendix I: Supplementary Unit--Data Entry

Provides the teacher with an additional unit to use with Section I.

OFFICE EDUCATION ESSENTIAL ELEMENTS

BUSINESS COMPUTER APPLICATIONS I

(Blended Course)

75.87

(e) **Business Computer Applications (one, two, or three units) shall include the following essential elements:**

(1) Concepts and skills related to computer operations. The student shall be provided opportunities to:

- (A) demonstrate comprehension of computer-related vocabulary;
- (B) describe the functions of the components of a computer system;
- (C) demonstrate and apply the capabilities of an operating system; and
- (D) explore the concepts of telecommunication techniques and networking.

(2) Concepts and skills related to word processing. The student shall be provided opportunities to:

- (A) demonstrate word processing concepts;
- (B) apply higher-level capabilities of word processing tools and software; and
- (C) understand the procedures and recognize the importance of merging data processing and word processing.

(3) Concepts and skills related to spreadsheets. The student shall be provided opportunities to:

- (A) demonstrate higher-level spreadsheet concepts; and
- (B) apply higher-level capabilities of spreadsheets.

(4) Concepts and skills related to database management. The student shall be provided opportunities to:

- (A) demonstrate database concepts, procedures, and capabilities; and
- (B) apply higher-level capabilities of database management.

(5) Concepts and skills related to advanced application software. The student shall be provided opportunities to:

- (A) discuss integration of people and computers for productivity;

(B) demonstrate the ability to apply information processing concepts and skills to realistic business situations;

(C) demonstrate the ability to apply information processing concepts and skills to realistic personal situations; and

(D) identify tools for preparing information for mass distribution including desktop publishing, graphics, and maintenance of electronic bulletin boards.

(6) Concepts and skills associated with the social implications of computers. The student shall be provided opportunities to

(A) examine issues concerning responsible use of computer systems; and

(B) understand the social ramifications of computer applications related to privacy, values, and reliability of systems.

SUGGESTED SCOPE AND SEQUENCE

BUSINESS COMPUTER APPLICATIONS I

SECTION/UNIT		TITLE	WEEKS	HRS.
I.		**INTRODUCTION TO BCAI**		
	1.	Introduction to the Course	1/2	
3				
	2.	Computer-Related Concepts	4	20
II.		**WORD PROCESSING**		
	1.	Concepts of Word Processing	2	10
	2.	Word Processing Applications	4	20
III.		**ELECTRONIC SPREADSHEET**		
	1.	Concepts of Electronic Spreadsheets	2	10
	2.	Electronic Spreadsheet Applications	3	15
IV.		**DATABASE MANAGEMENT**		
	1.	Concepts of Database Management	2	10
	2.	Database Management Applications	3	15
V.		**COMPUTER COMMUNICATION TOOLS**		
	1.	Telecommunications	1	5
	2.	Concepts of Computer Graphics	1	5
	3.	Desktop Publishing	1	5
	4.	Business Application Software	1	5
VI.		**SOCIAL IMPLICATIONS OF COMPUTER USAGE**		
	1.	Social Implications	1	5
		CLOSURE	1/2	2
		TOTAL WEEKS/HOURS ALLOCATED:	**26**	**130**

Ten weeks have been set aside to cover the common essential elements, review, makeup work, and testing.

SECTION I

INTRODUCTION TO BUSINESS COMPUTER APPLICATIONS I

ESSENTIAL ELEMENTS

75.87(e)(1), (5)(A)

1. Concepts and skills related to computer operation. The student will be provided opportunities to:

   A. Demonstrate comprehension of computer-related vocabulary;

   B. Describe the functions of the components of a computer system; and

   C. Demonstrate and apply the capabilities of an operating system.

5. Concepts and skills related to advanced application software. The student will be provided the opportunities to:

   A. Discuss integration of people and computers for productivity.

INTRODUCTION TO BUSINESS COMPUTER APPLICATIONS I

INTRODUCTION TO THE COURSE

This unit provides an introduction to the course of Business Computer Applications I. It includes an overview of the purpose, objectives, and course contents. Additional subjects such as classroom organization, management, and safety precautions are also included.

SUGGESTED UNIT LESSON PLAN

SECTION I: INTRODUCTION TO BUSINESS COMPUTER APPLICATIONS I

UNIT I: INTRODUCTION TO THE COURSE

ESSENTIAL ELEMENT: None

ALLOCATED TIME: 3 Hours

UNIT OBJECTIVE: Students will develop an understanding of the purpose, contents, and organization of the course Business Computer Applications I.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Relate the purpose of Business Computer Applications I to office education, business, and industry.
2. Recognize the role of the youth organization relative to Business Computer Applications I.
3. Discuss course objectives, equipment, units, competencies, and evaluation measures.
4. Explain classroom organization, management, and safety.

FOCUS: Students will be provided the opportunity to develop and use both academic and vocational skills that will be useful whether they are taking advanced courses or making the transition from high school to the world of work.

DOMAINS: Activities and competency tests have been designed to provide learning experiences utilizing the cognitive, psychomotor, or affective domains. Activities and competency tests are coded on the Activity and Competency Test Matrices.

BASIC SKILLS: Activities and competency tests have been designed to reinforce the basic skills of reading, writing, and/or mathematics. Activities and competency tests have been coded on the Activity and Competency Test Matrices.

CONTENT OUTLINE

I. Purpose of course
  A. Introduction to office education
  B. Objectives of the course
  C. Relationship of course to business
II. Course overview
  A. Classroom equipment
  B. Units of instruction
  C. Competencies
  D. Evaluation
  E. Classroom organization and management
  F. Safety

SUGGESTED TEACHER ACTIVITIES

General Teacher Preparation

1. Preview unit.
2. Review unit objectives.
3. Make instructional analysis.
4. Assess student learning needs.
5. Decide on lesson domain: cognitive, psychomotor, or affective domain.
6. Select instructional materials based on instructional analysis and student learning needs.
7. Select instructional strategies based on lesson content and student learning needs.
8. Prepare lesson plans from the unit lesson.
9. Prepare additional instructional material.
10. Reserve necessary media and equipment.

Teacher Presentation

1. Present student objectives.
2. Establish rapport with students.
3. Review lesson objectives with students.
4. Relate lesson to prior or future learning.
5. When appropriate, encourage student interaction through questioning, discussions, or some other strategy.
6. Emphasize the value/importance of the unit or activity.
7. Allow time for closure of a lesson.

Reteach Activities

1. Identify area(s) of weakness from results of evaluation.
2. Select unit activities not previously used.
3. Use additional resources and/or create materials based on student learning needs.
4. Use a different teaching strategy in reteaching.
5. Retest.

Specific Teaching Suggestions

The purpose of this unit is to assist you with introducing the course to your students. The introduction is beneficial to both you and the students. It provides you with the opportunity to present any policies, procedures, expectations, and other relative information which enhance classroom instruction and operations. It establishes a working environment for the students and presents an overview for the year's work.

It is suggested that you add other subject matter and instructional materials relative to your teaching assignment. Because the purpose of this section is to introduce the course, student activities and evaluation measures are limited. Some of the teaching activities can be used to develop student activities. It is recommended that some method for assessing student learning be conducted.

1. Design a bulletin board showing the relationship of Business Computer Applications I to office education. A suggestion might be: "Under the Umbrella of Office Education." List cluster courses and specific courses, highlighting Business Computer Applications I.
2. Ask questions at the beginning of the course, such as:
    a. Why are you taking this course?
    b. What does the title "Business Computer Applications I" mean to you?
    c. What do you think the course content covers?
    d. What is vocational education?
    e. What is office education?
3. Show and discuss the transparency "Benefits of Office Education."
4. Show and discuss transparency, "Learning through Business Computer Applications I."
5. Ask students to write down their perceived likes and dislikes of office occupations. Invite someone who works in an office or related field to respond. Inform the speaker in advance of the nature of the assignment. Secure a person with speaking abilities who projects a positive work image.
6. Post data on job market projections. Update periodically throughout the year with projections from different resources.
7. Invite a former office education student to discuss Business Professionals of America. Be sure to inform the speaker in advance what topic you want covered in his/her presentation. You may want to include a question-and-answer period.
8. Invite a former student who was a member of the youth organization to discuss the organization and answer questions.

9. Review youth conferences with students. Competitive event guidelines could be distributed and discussed.

10. Develop an orientation presentation on the office machines and/or equipment in the classroom.

11. Develop, disseminate, and discuss handouts covering classroom policies and procedures. Let students make suggestions for other policies.

12. Disseminate the terminology page. Review the list with the students. Ask that they add to the list any terms which they do not understand. Periodically review the lists with the students. One suggestion is that students identify the term and see if one of the class members knows the meaning.

13. Invite an office worker to speak to the class on the importance of job competency.

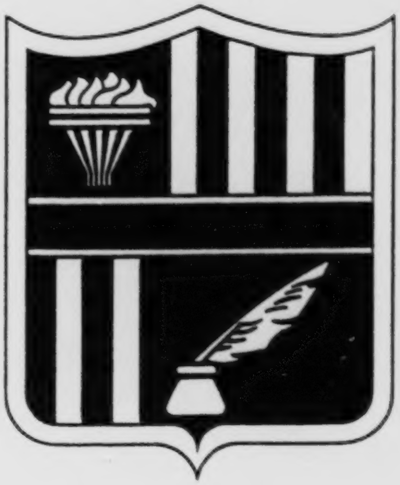
14. Show a film relative to one of the topics: work world, fire precautions, or others.

HANDOUT 1: BUSINESS PROFESSIONALS OF AMERICA

COLORS: Navy blue, tan and red

OFFICIAL TAGLINE: **"Today's students, tomorrow's business professionals"**
Used in all printed materials in conjunction with the name.

PLEDGE: We are met in a spirit of friendship and goodwill as we prepare for productive lives in business and office careers. We work together to develop professionalism and leadership through Business Professionals of America and pledge our loyalty to our nation.



EMBLEM: The four points of the Business Professionals of America emblem stand for Ambition, Leadership, Sociability and Poise. The shield itself stands for the honor and dignity of the office profession. The quill and inkwell represent the stability of the office through the ages. The stripes represent direction; the torch signifies the ambition of the members as they strive to achieve goals to bring recognition to themselves and to our national organization.

HANDOUT 2: GOALS OF BUSINESS PROFESSIONALS OF AMERICA

1. **To develop student leadership.** By participating, planning, serving as officers, conducting meetings, and cooperating with fellow students, coordinators and teachers, students can develop their leadership qualities.

2. **To improve poise, sociability, attitude, and tact.** Members of this organizations improve their social graces by taking an active role in office, classroom, and social activities. Many of the students enrolled in these programs have not previously had the opportunity to participate in an organization. Business Professionals of America gives them the opportunity to acquire a sense of belonging for the first time.

3. **To develop vocational competencies in business occupations.** Vocational competence means being qualified to enter the world of work with a job skill and a certain amount of confidence in one's ability to perform that job. Students in Business Professionals of America are expected to be able to perform at least one job competently and effectively. Of course, their training is more comprehensive than this.

4. **To promote better understanding at local, state, and national levels.** Student participation and fellowship at all levels promotes better programs and provides these students with a knowledge of the people, programs, and activities that are being carried out elsewhere.

5. **To promote student ambition for useful purposes.** Students learn the value of their own personal ambition and derive satisfaction from helping others and from serving.

6. **To learn to plan effectively.** Everyone needs to know where he/she is and where he/she is going. Planning is essential to all successful activities.

7. **To develop an enthusiasm for learning and for remaining knowledgeable in the office held.** In these days, graduating high school seniors can expect to change their major occupation three times. Therefore, enthusiasm for learning is absolutely essential. Students are made aware of our changing society and are taught the necessity of constantly updating their knowledge.

8. **To develop confidence and a spirit of competition.** People are competing during their entire lifetimes. Competitive events create excitement, and stimulate and facilitate learning and advancement.

9. **To learn to get along with others.** Even though an individual may have skill and ability, he/she cannot get a job and keep it if unable to get along with fellow workers.

10. **To develop loyalty through esprit de corps.** Everyone needs pride in his or her organization if the organization is to be successful and of benefit to society.

11. **To understand and promote business.** Our "quiet" President, Calvin Coolidge, remarked, "The business of America is business." Our American capitalistic economy makes possible one of the highest standards of living in the world. Business Professionals of America students are proud to be part of this great business world and to be able to help promote it.

BENEFITS OF OFFICE EDUCATION

DEVELOPMENT OF USEFUL ACADEMIC AND VOCATIONAL SKILLS ARE HELPFUL WHEN:

(1) TAKING ADVANCED COURSES

(2) SEEKING EMPLOYMENT

(3) MAINTAINING EMPLOYMENT

DEVELOPMENT OF SOCIAL AND LEADERSHIP SKILLS THROUGH PARTICIPATION IN:

BUSINESS PROFESSIONALS OF AMERICA

- ATTEND YOUTH CONFERENCES
- ENTER COMPETITIVE EVENTS
- RUN FOR AN OFFICE
- PARTICIPATE IN LOCAL CHAPTER ACTIVITIES

LEARNING THROUGH

BUSINESS COMPUTER APPLICATIONS I

INTRO TO BCAI

INTRO TO THE COURSE
COMPUTER-RELATED CONCEPTS

WORD PROCESSING

CONCEPTS OF WORD PROCESSING
WORD PROCESSING APPLICATIONS

ELECTRONIC SPREADSHEETS

CONCEPTS OF ELECTRONIC SPREADSHEETS
ELECTRONIC SPREADSHEET APPLICATIONS

DATABASE MANAGEMENT

CONCEPTS OF DATABASE MANAGEMENT
DATABASE MANAGEMENT APPLICATIONS

COMPUTER COMMUNICATION TOOLS

TELECOMMUNICATIONS
CONCEPTS OF COMPUTER GRAPHICS
DESKTOP PUBLISHING
BUSINESS APPLICATION SOFTWARE

SOCIAL IMPLICATIONS OF COMPUTER USAGE

SOCIAL IMPLICATIONS

SUGGESTED UNIT LESSON PLAN

SECTION I: INTRODUCTION TO BUSINESS COMPUTER APPLICATIONS I

UNIT II: COMPUTER-RELATED CONCEPTS

ESSENTIAL ELEMENTS: 75.87 (e)(1), (5)(A)

ALLOCATED TIME: 20 Hours

UNIT OBJECTIVE: Students will demonstrate the ability to understand computer processing concepts.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Identify basic computer-related terminology.
2. Outline the functions of data processing.
3. Illustrate the parts of the information processing cycle and explain how each part is interdependent within the cycle.
4. Illustrate parts of the computer processor.
5. Compare the similarities and differences among various computer systems.
6. Outline the events in history pertinent to breakthroughs in data processing.
7. Describe and apply the capabilities of an operating system.
8. Explain how the use of computer-related tools can increase productivity in an organization.

FOCUS: Knowledge of general computer operation and background is necessary in order to understand the more complex computer programs.

1. The ability to identify basic computer-related terms is essential in the day-to-day use of computer-related concepts.

2. Understanding each part of the information processing cycle and how the parts work together is imperative. The student can then process data and, at the same time, understand how the data were processed.
3. Identification of various computer systems is important in choosing the system most suitable for the task at hand.
4. Understanding the history of data processing is necessary to understand the development of computers.
5. Categorization and definition of computer languages allow the student to decide which language is most effective in specific problem solving.

DOMAINS: Activities and competency tests have been designed to provide learning experiences utilizing the cognitive, psychomotor, or affective domains. Activities and competency tests are coded on the Activity and Competency Test Matrices.

BASIC SKILLS: Activities and competency tests have been designed to reinforce the basic skills of reading, writing, and/or mathematics. Activities and competency tests have been coded on the Activity and Competency Test Matrices.

CONTENT OUTLINE

I. Definition of data processing

II. Functions of data processing
   - A. Data collecting
   - B. Recording
   - C. Sorting
   - D. Classifying
   - E. Calculating
   - F. Storing and retrieving
   - G. Summarizing
   - H. Communicating

III. Information processing cycle
   - A. Input
   - B. Processing
   - C. Output
   - D. Auxiliary storage

IV. Types of computers
   - A. Supercomputers
   - B. Mainframe
   - C. Minicomputer
   - D. Microcomputers
   - E. Laptop

V. History of data processing
   - A. Ancient times to 1800
   - B. Devices and contributions 1800-1900

- C. Devices and contributions 1900-present
- D. Computer generations

VI. Types of microcomputer operating systems
- A. MS-DOS
- B. OS/2
- C. Apple

VII. Productivity and computer-related tools
- A. Word processing
- B. Networks
- C. Decision support systems
- D. Artificial Intelligence
- E. Expert systems
- F. Office automation
- G. Databases

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SUGGESTED TEACHER ACTIVITIES

General Teacher Preparation

1. Preview the unit.
2. Review unit objectives.
3. Make instructional analysis.
4. Assess student learning needs.
5. Decide on lesson domain: cognitive, psychomotor, or affective domain.
6. Select instructional materials based on instructional analysis and student learning needs.
7. Select instructional strategies based on lesson content and student learning needs.
8. Prepare lesson plans from the unit lesson.
9. Prepare additional instructional material.
10. Reserve necessary media and equipment.

Teacher Presentation

1. Present student objectives.
2. Establish rapport with students.
3. Review lesson objectives with students.
4. Relate lesson to prior or future learning.
5. When appropriate, encourage student interaction through questioning, discussions, or some other strategy.
6. Emphasize the value/importance of the unit or activity.
7. Allow time for closure of a lesson.

Reteach Activities

1. Identify area(s) of weakness from results of evaluation.
2. Select unit activities not previously used.
3. Use additional resources and/or create materials based on student learning needs.
4. Use a different teaching strategy in reteaching.
5. Retest.

Specific Teaching Activities

1. Bulletin board ideas:

   Data processing concepts
   History of data processing
   Information processing cycle
   Types of computers
   Computer languages

2. Use transparencies as needed.

3. Secure samples of:
   - old media: floppy diskette
     - magnetic tape
     - punched paper tape
     - disk pack
   - old hardware: vacuum tube
     - transistors
     - chips
     - wafers
   - samples of programs written in various languages

4. The following Supplementary MS-DOS tests are available for use with this unit:

   MS-DOS COMMANDS TEST
   MS-DOS TEST
   OPERATING SYSTEMS SKILLS TEST

   Translate these to your computer system if you have MS-DOS equipment.

ACTIVITY MATRIX

Activities	**Domains**			**Basic Skills**		
	Cognitive	**Psycho-motor**	**Affective**	**Reading**	**Writing**	**Math**
1	X			X		
2	X				X	
3 Project 1	X				X	
Project 2	X				X	
Project 3	X				X	
Project 4	X			X		
4 Project 1	X				X	
Project 2	X			X		
Project 3	X				X	
Project 4	X			X		
5 Project 1	X			X		
Project 2	X				X	
Project 3	X				X	
Project 4	X				X	
6	X				X	
7 Project 1	X				X	
Project 2	X				X	

COMPETENCY TEST MATRIX

Parts	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
I Project 1	X			X		
Project 2	X			X		
II	X				X	
III Project 1	X				X	
Project 2	X				X	
Project 3	X				X	
IV	X				X	
V Project 1	X			X		
VI	X				X	
VII Project 1	X				X	
Project 2	X				X	
Project 3	X				X	

HANDOUT 1

PC COMPARISON CHART

	PC XT	PC AT	386
USES	Personal/Business	Personal/Business	Personal/Business Graphics/CAD/ Network
MICROPROCESSOR	Intel 8088	Intel 80286	Intel 80386
DATAWORD	8 bits	16 bits	32 bits
SPEED	4-8MHz	6-12MHz	12-20MHz
OPERATING SYSTEM	MS-DOS	MS-DOS-OS/2	MS-DOS-OS/2
ADDRESSABLE MEMORY	640K	16MB	4GB
DISK STORAGE			
5.25 floppy	360K DS/DD	1.2M DS/QD	1.2M DS/QD
3.5 stiffy	720K DS/DD	1.44M DS/QD	1.44M DS/QD
COST	\$400-\$2000	\$800-\$2000	\$1700-\$8000
STANDARD	1983-1986	1986-1987	1988-
USERS/PROGRAMS	1/1	1/MANY	MANY/MANY

HANDOUT 2

DEVELOPMENT OF THE IBM PERSONAL COMPUTER

Company strategists never expected the PC to end up on corporate desktops. They set up a maverick outfit, the Entry Systems Division, and permitted its staff to break all unwritten corporate rules. They built the PC with off-the-shelf components from other companies. IBM then sold the PC in computer stores and did not try to make it compatible with everything else on the market! Critics argued that it was no big deal. All it could do was run CP/M programs that had been ported over from 8-bit machines. In fact, that was true. There was no software for the new machine. Some of the PC's early programs included WordStar, dBASE, and SuperCalc, all of which had migrated from the CP/M world. IBM saw the machine appealing to the same crowd buying the Apple II. IBM expected sales to top out at 250,000 units, a figure so meager that some of IBM's marketers refused to handle such a puny account! IBM eventually sold over 3 million units.

Announced 8/12/81
16K or 64K, expandable to 544K
Two 160K disk drives
8088 microprocessor, 16-bit, but with 8-bit bus to be
  compatible with current I/O devices
PC-DOS 1.0
PC-DOS 1.1 for 320K drives
PC-DOS 2.0 for 360K drives

IBM's impact on personal computing has been very positive. It raised the stakes of the personal computer business substantially when it introduced the IBM PC. The IBM PC used a 16-bit processor when every other microcomputer had an 8-bit processor. The IBM PC offered more memory, making sophisticated business software possible. This in turn provided a platform for programs that revolutionized the personal computer industry and made it grow rapidly.

IBM PC XT

Announced 8/8/83 256K
10MB hard disk
PC-DOS 2.0 for hard disk
$4995
Sold over 2 million units.

IBM PCjr

Announced 11/1/83 64K
Color monitor
Optional 360K disk drive
PC-DOS 2.1 for half-height disk drive. Keyboard interfaced with the system unit via an infrared beam. To ensure that the PCjr did not encroach on its big brother's sales, IBM purposely gave the machine only an approximation of PC compatibility. Home users were put off by the $699 price tag. IBM came to the rescue with a multimillion-dollar ad campaign, 128K, a second disk drive, and a redesigned keyboard. Sold an estimated 530,000 units; April 1985, production stopped.

IBM Portable PC

Announced 2/16/84 256K
Did not support hard disks and lacked a parallel port. IBM's tardy and half-hearted response to the Compaq portable. IBM made the mistake of assuming that the Compaq was successful merely because it was portable, not because IBM did not have enough PCs to meet user demand. They crippled the Portable intentionally so it would not impact PC sales. The machine limped along for 16 months before IBM put it out of its misery.

IBM PC AT "Advanced Technology"

Announced 8/14/84
80286 16-bit microprocessor
6MHz
20MB hard disk
1.4MB floppy disk
Problems with the hard disk disillusioned many users. Clone makers brought out bigger, swifter, and cheaper 80286 machines. Estimated 650,000 units sold.

IBM PC II

Scaled down AT with an 80186 microprocessor
July 1985, project cancelled.
(Tandy 2000 used the 80186, which was likewise scrapped after a limited production cycle.)

IBM PC AT Enhanced

8MHz
New style keyboard
Pulled into market well behind faster peers.

IBM PC Convertible

Announced 4/2/86
IBM's tardy entry into the laptop wars is a solid, reasonably priced machine that has failed to inspire the masses.

IBM PC XT/286

Announced 9/2/86
Expensive, incongruous hybrid that mated the AT's motherboard with the XT's chassis, and which is too small to hold AT boards. (Tandy 1000TX is an XT compatible, using the 80286 microprocessor, but without the capabilities of the AT.)

IBM PC/386SX

80386 processor
16-bit bus width
Speed runs between 286 and 386.

IBM PC/386

80386 processor
Runs at 26.6 SI rating.
32-bit bus width
Memory-management unit makes it more sophisticated than 286. Allows for multiprocessing of programs. Clock speed is faster; will process two times faster than the 286.

IBM 486
80468 processor
Announced May 1989. Same as 386 but has a built-in math coprocessor.

IBM PS/2 family

Announced 4/2/87

1. **Model 25**
   Announced 8/1/87
   8086 microprocessor
   8MHz
   720K 3.5-inch disk
   PC-DOS 3.3 for 3.5-inch drives
   Combined system unit, disk drives and monitor; cannot run the new OS/2 operating system; has Vector Graphics Array monitor.

2. **Model 30**
   8086 microprocessor
   8MHz
   720K disk drive; 20MB hard drive; 640K
   PC-DOS 3.3; cannot run the new OS/2 operating system; has Vector Graphics Array monitor.

3. **Model 50**
   80286 microprocessor
   10MHz
   1.44MB 3.5-inch disk; 20MB hard disk
   PC-DOS 3.3 and OS/2 for multitasking
   1MB on motherboard
   3 expansion slots

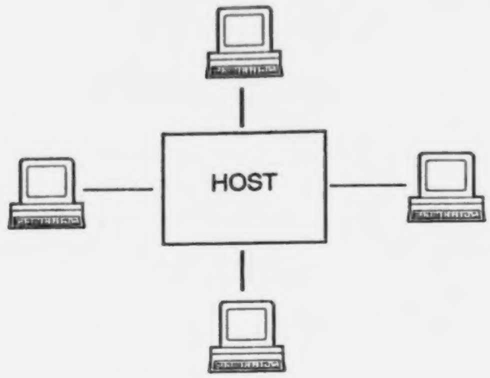
4. **Model 60**
   80286 microprocessor
   10MHz
   1.44MB 3.5-inch disk; 44 or 70MB hard disk
   PC-DOS 3.3 and OS/2 for multitasking
   1MB expandable to 15MB
   7 expansion slots

5. **Model 80**
   80386 microprocessor
   16MHz
   1.44MB 3.5-inch disk; 44, 70, 115MB hard disk
   PC-DOS 3.3 and OS/2 for multitasking
   2MB expandable to 16MB
   7 expansion slots

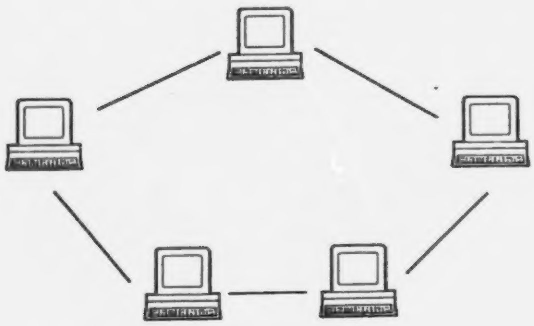
Laptop
Vary in size, shape, and power. Growing smaller and more powerful with each announcement. Weighs generally less than nine pounds.

HANDOUT 3: NETWORKS

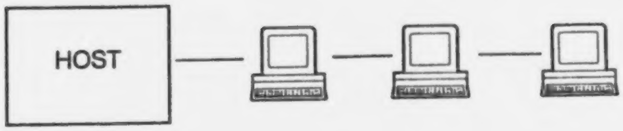
STAR NETWORK



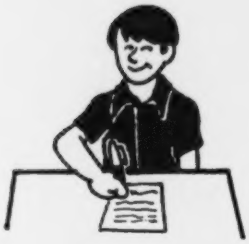
RING NETWORK



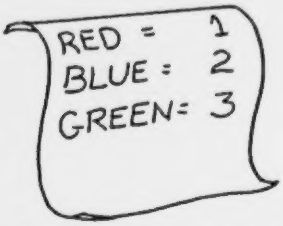
BUS NETWORK



DATA PROCESSING OPERATIONS



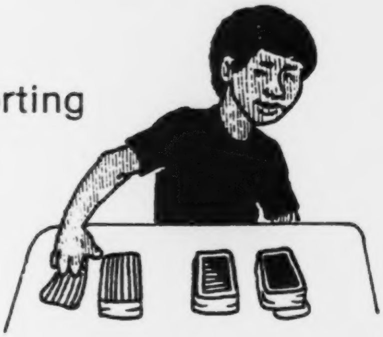
Recording

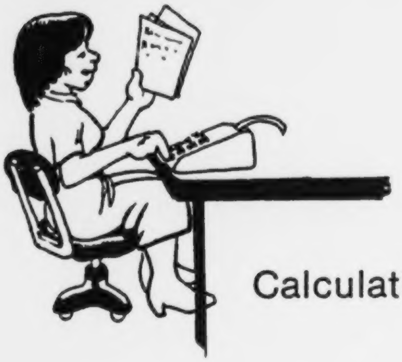


RED = 1
BLUE = 2
GREEN = 3

Classifying (coding)

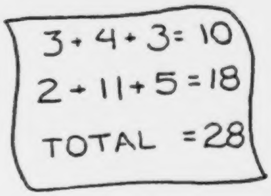
Sorting



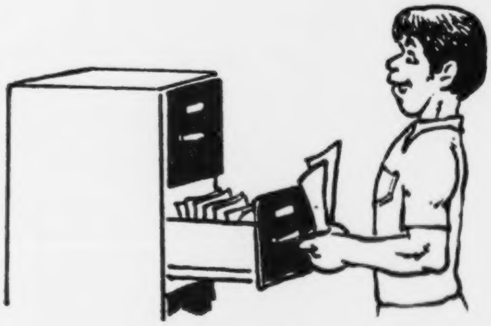


Calculating

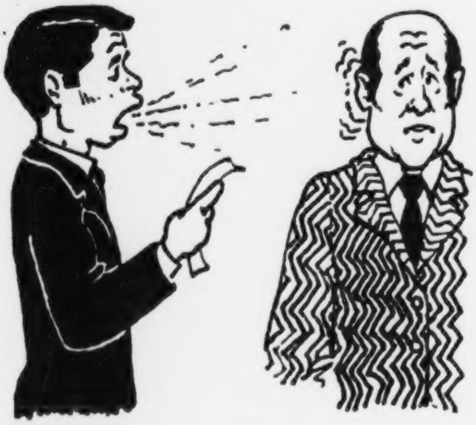
Summarizing



3 + 4 + 3 = 10
2 + 11 + 5 = 18
TOTAL = 28



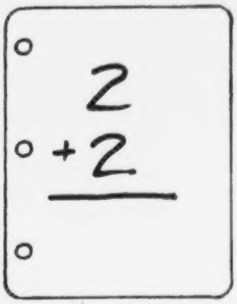
Storing



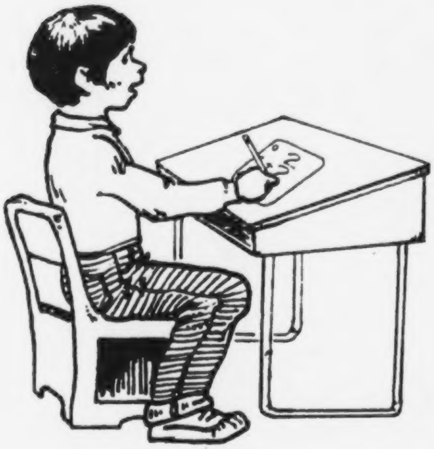
Communicating

WHAT IS DATA PROCESSING?

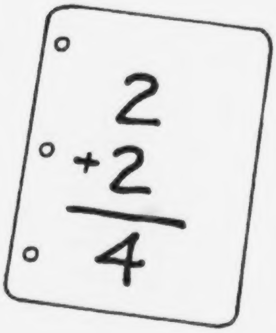
Data (information)



Processing

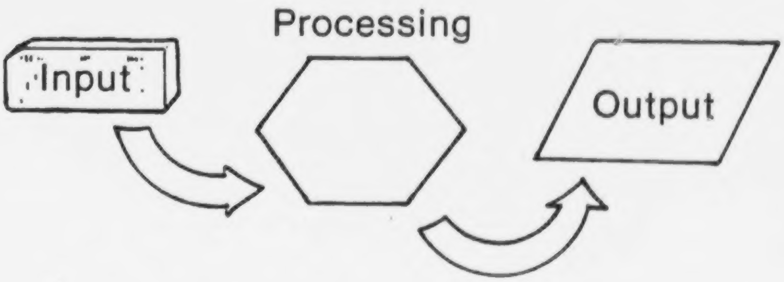


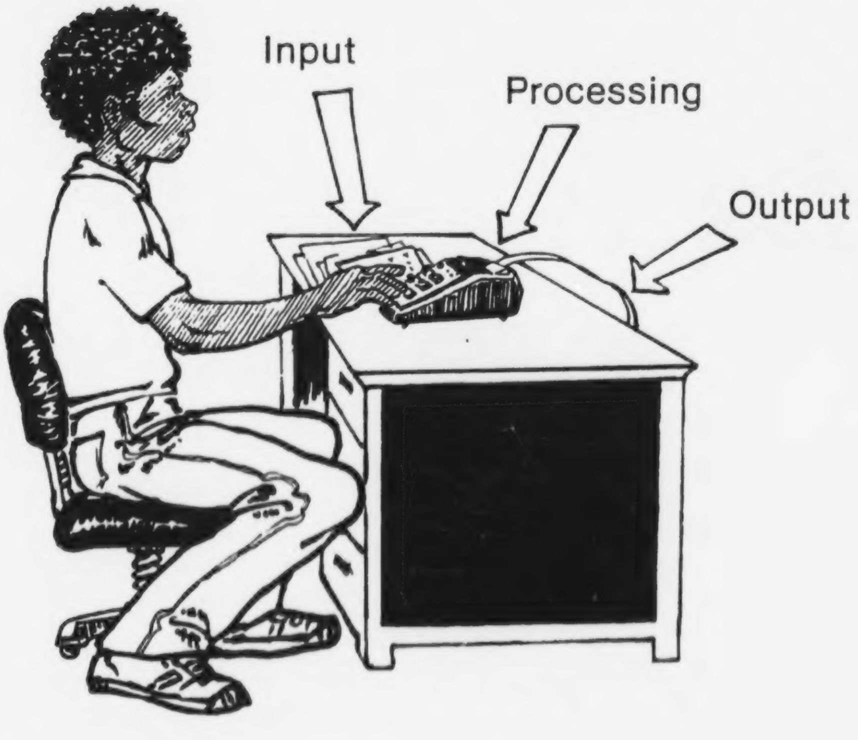
Answer or Desired Result



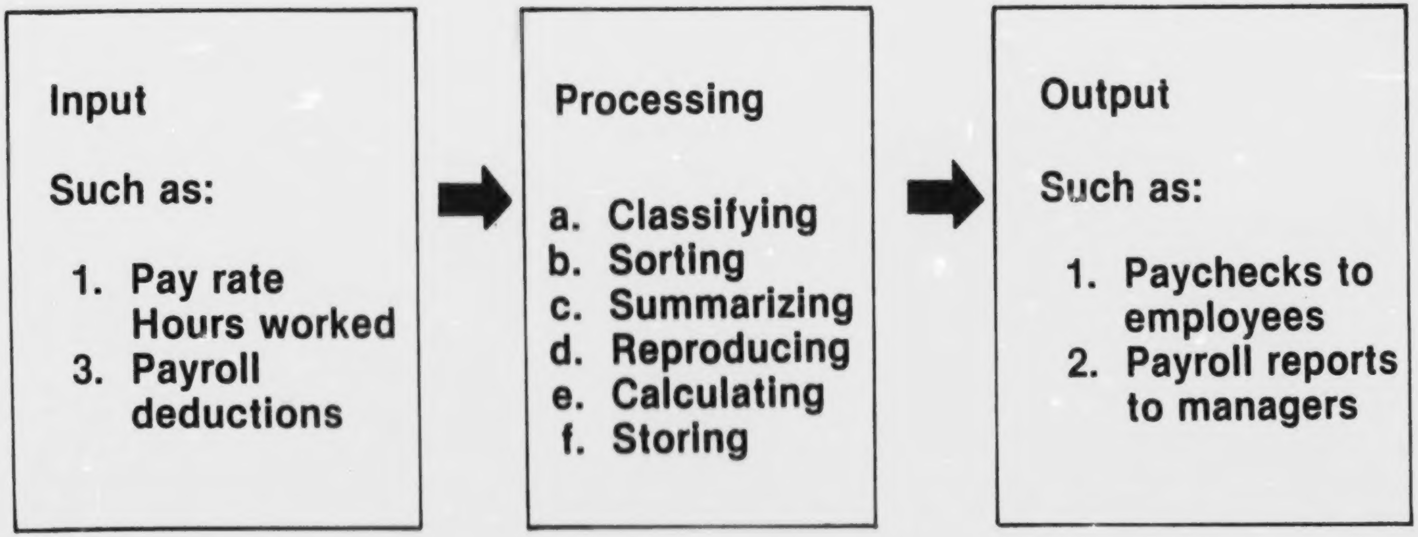
TM-2

DATA PROCESSING CYCLE


Input
Processing
Output


Input
Processing
Output

Data Processing Functions



Input

Such as:

1. Pay rate
   Hours worked
3. Payroll deductions

Processing

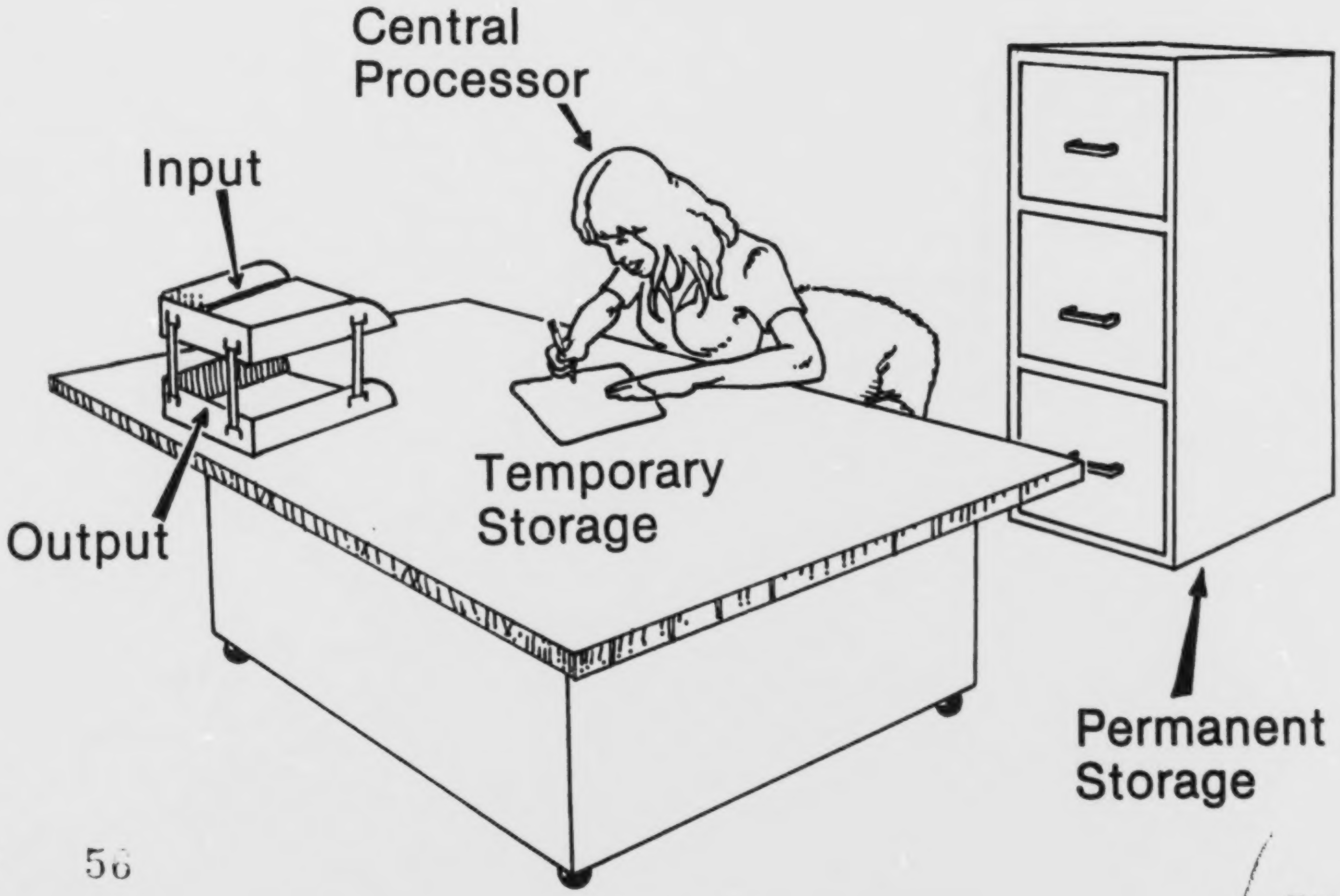
a. Classifying
b. Sorting
c. Summarizing
d. Reproducing
e. Calculating
f. Storing

Output

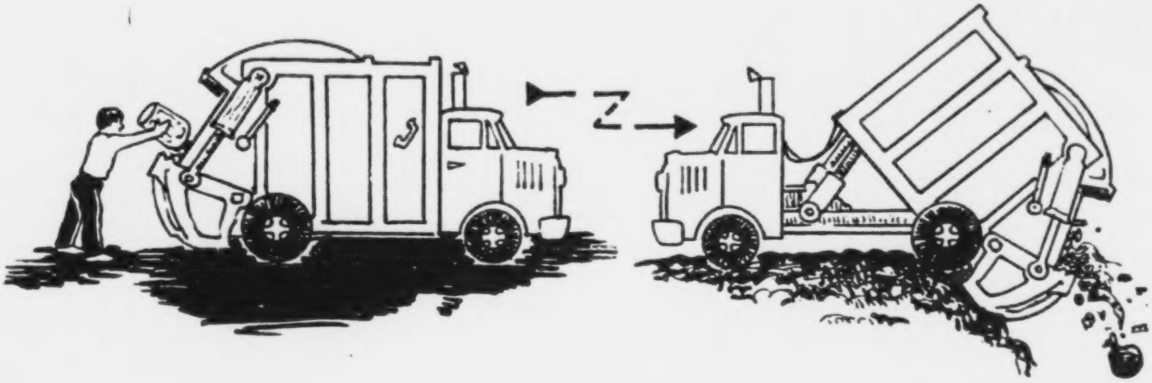
Such as:

1. Paychecks to employees
2. Payroll reports to managers

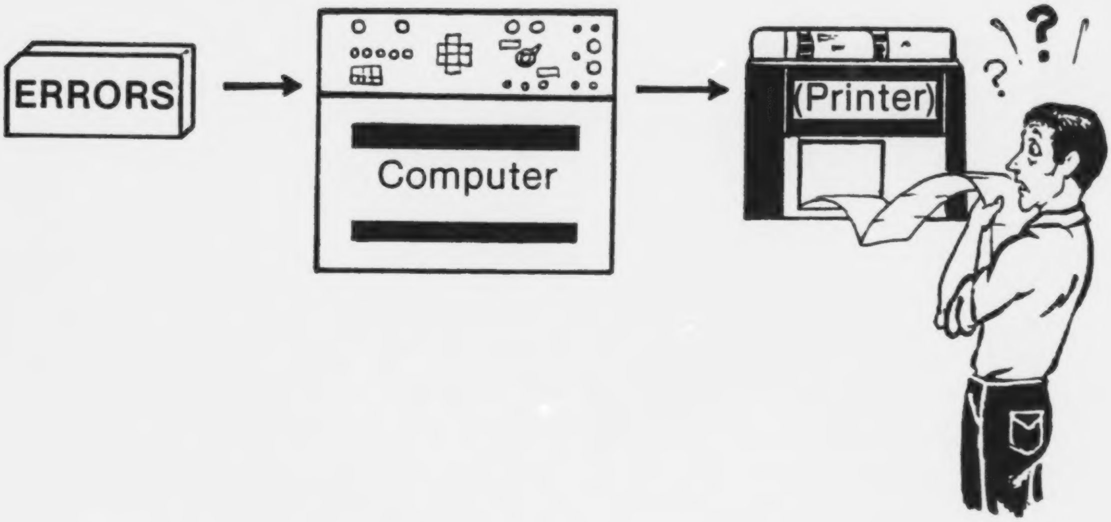
Components of a Manual Data Processing System


Central Processor
Input
Temporary Storage
Output
Permanent Storage

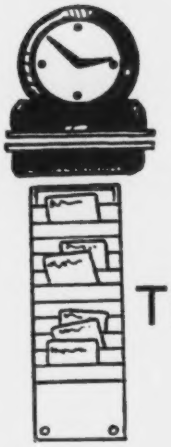
GIGO !



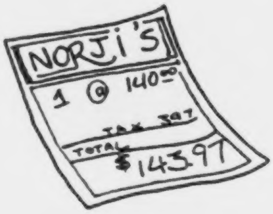
Garbage In = Garbage Out


ERRORS
Computer
(Printer)
? ?

SOME SOURCES OF INFORMATION

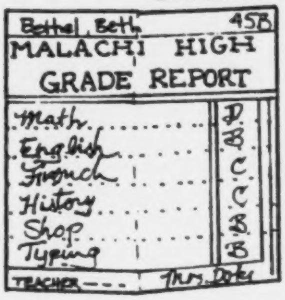


Time cards

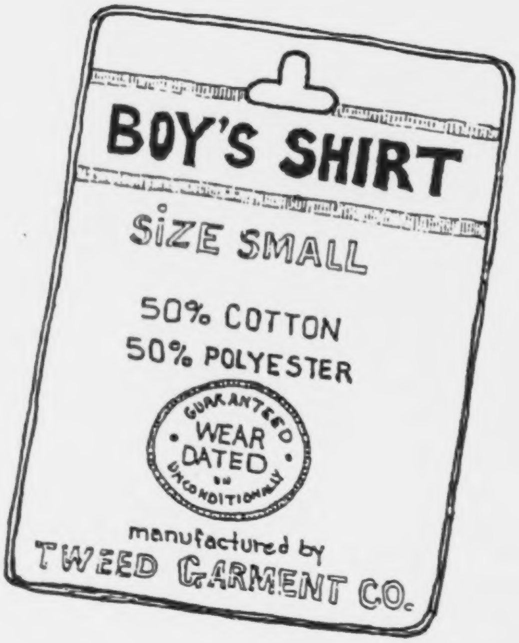

NORJI'S
1 @ 140.00
TAX 3.97
TOTAL
$143.97

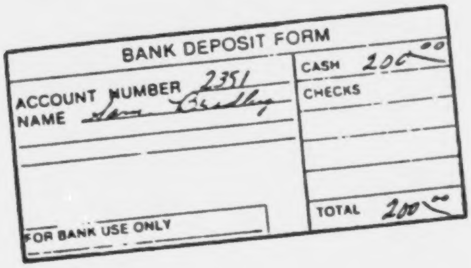
Sales slips

Grade reports


Bethel, Beth
45B
MALACHI HIGH
GRADE REPORT
Math D
English B
French C
History C
Shop B
Typing B
TEACHER
Mrs. Doke

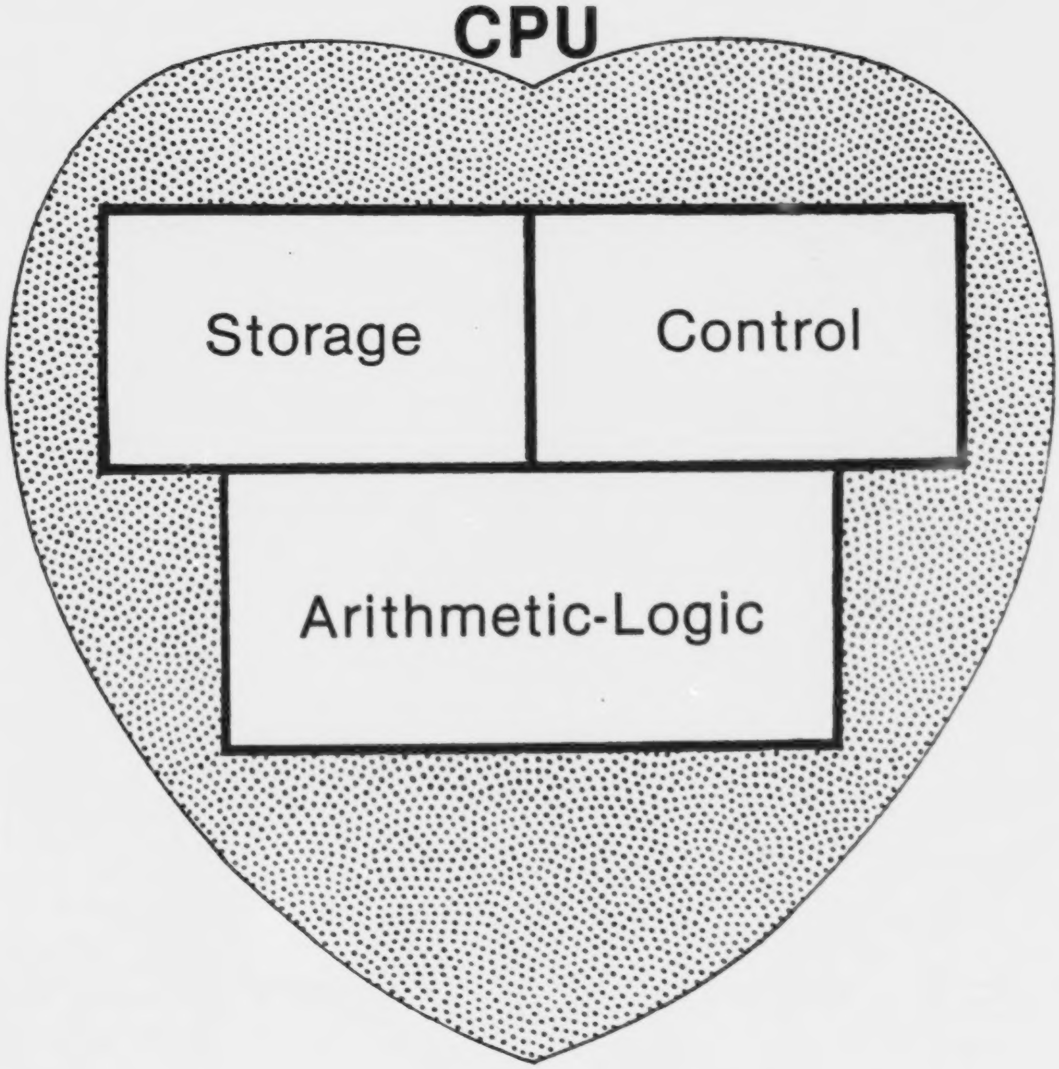
Merchandise tags


BOY'S SHIRT
SIZE SMALL
50% COTTON
50% POLYESTER
GUARANTEED
WEAR
DATED
UNCONDITIONALLY
manufactured by
TWEED GARMENT CO.

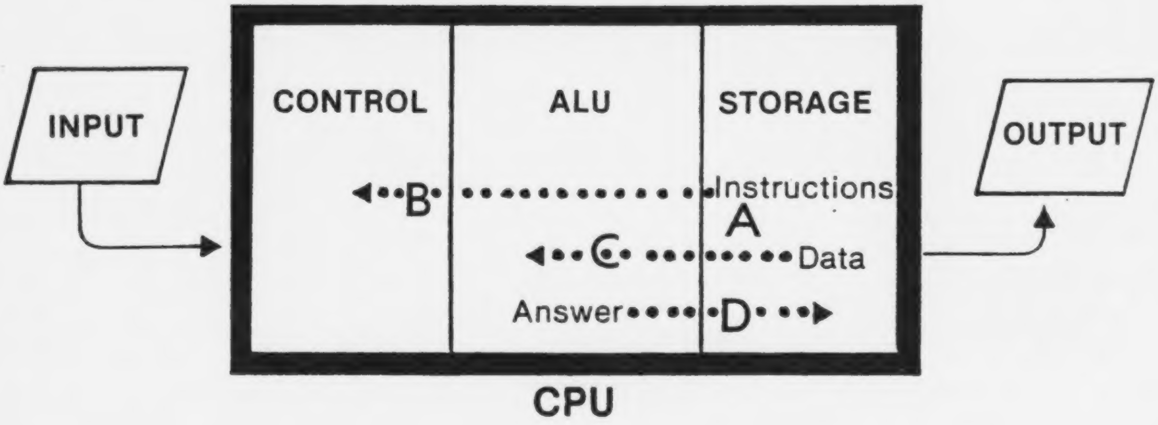

BANK DEPOSIT FORM
ACCOUNT NUMBER 2351
NAME
CASH 200.00
CHECKS
TOTAL 200.00
FOR BANK USE ONLY

Bank deposit slips

THE HEART OF THE COMPUTER SYSTEM


CPU
Storage
Control
Arithmetic-Logic

PROCESSING SEQUENCE


INPUT
CONTROL
ALU
STORAGE
OUTPUT
B
Instructions
A
C
Data
Answer
D
CPU

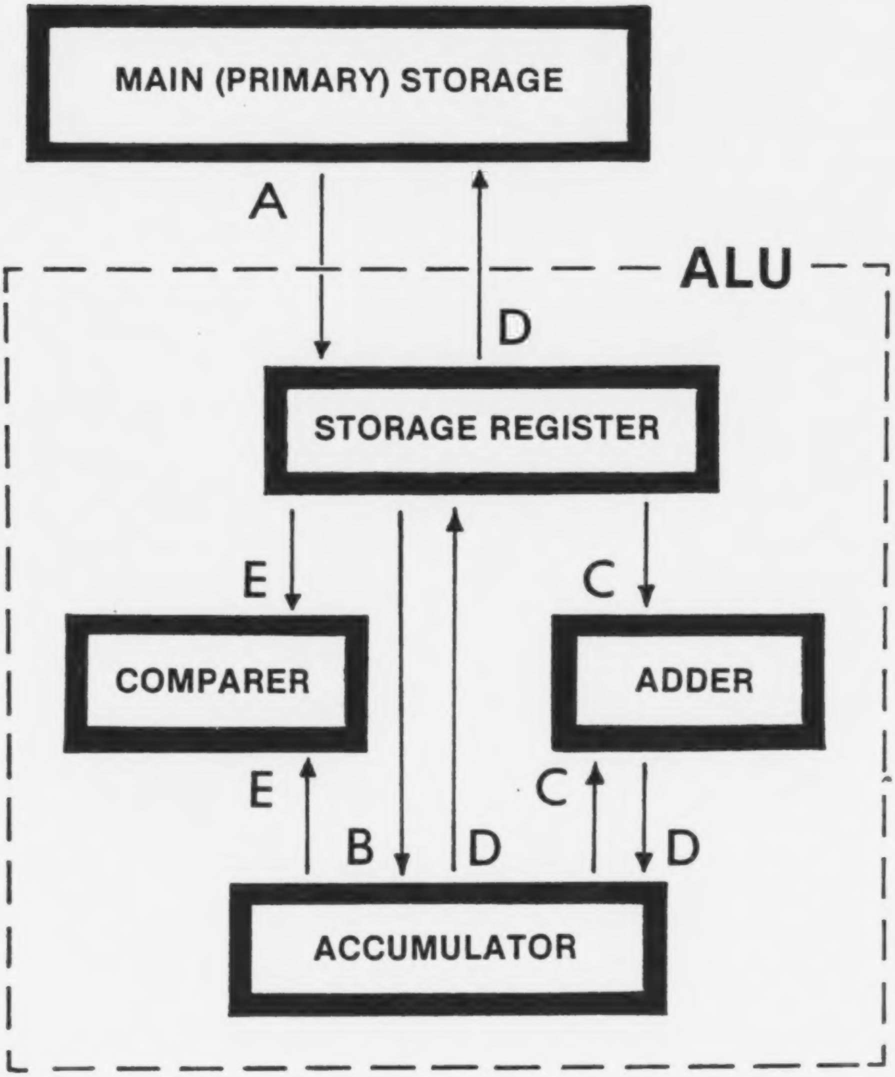
A. Instructions are stored in the main storage

B. One instruction is moved to the control unit

C. Data needed to carry out the instruction are moved to the ALU where the instruction is carried out

D. The answer to the computation is placed in main storage

ALU--DATA MOVEMENT

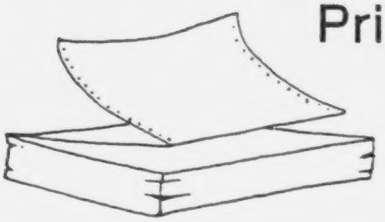

MAIN (PRIMARY) STORAGE
A
ALU
D
STORAGE REGISTER
E
C
COMPARER
ADDER
E
C
B
D
D
ACCUMULATOR

ALU - movement of data through Arithmetic-Logic unit

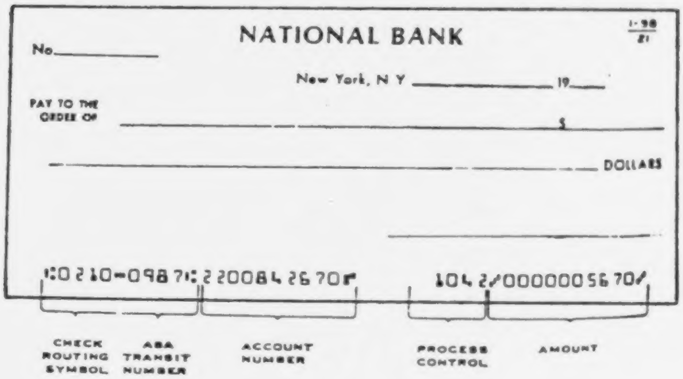
TM-10

FORMS OF OUTPUT

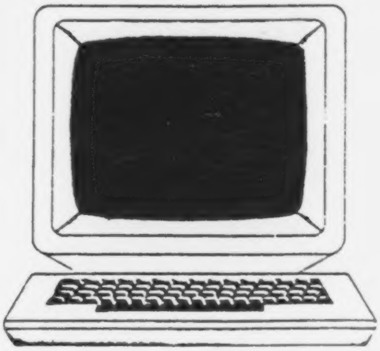
Printed reports



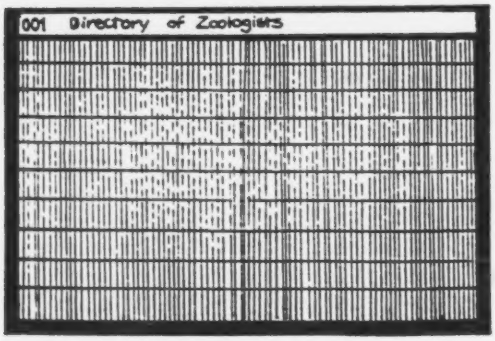
Checks


NATIONAL BANK
No.
1-98
21
New York, N Y
19
PAY TO THE ORDER OF
$
DOLLARS
⑆0210-0987⑆ 2 20084 2670⑈
1042/0000005670/
CHECK ROUTING SYMBOL
ABA TRANSIT NUMBER
ACCOUNT NUMBER
PROCESS CONTROL
AMOUNT

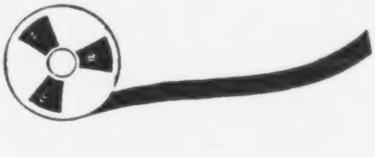
Visual



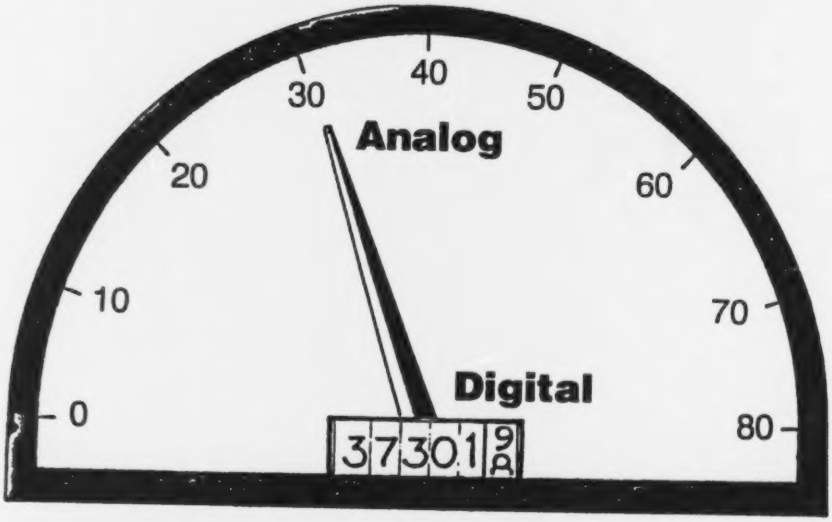
Microfiche


001 Directory of Zoologists

Microfilm

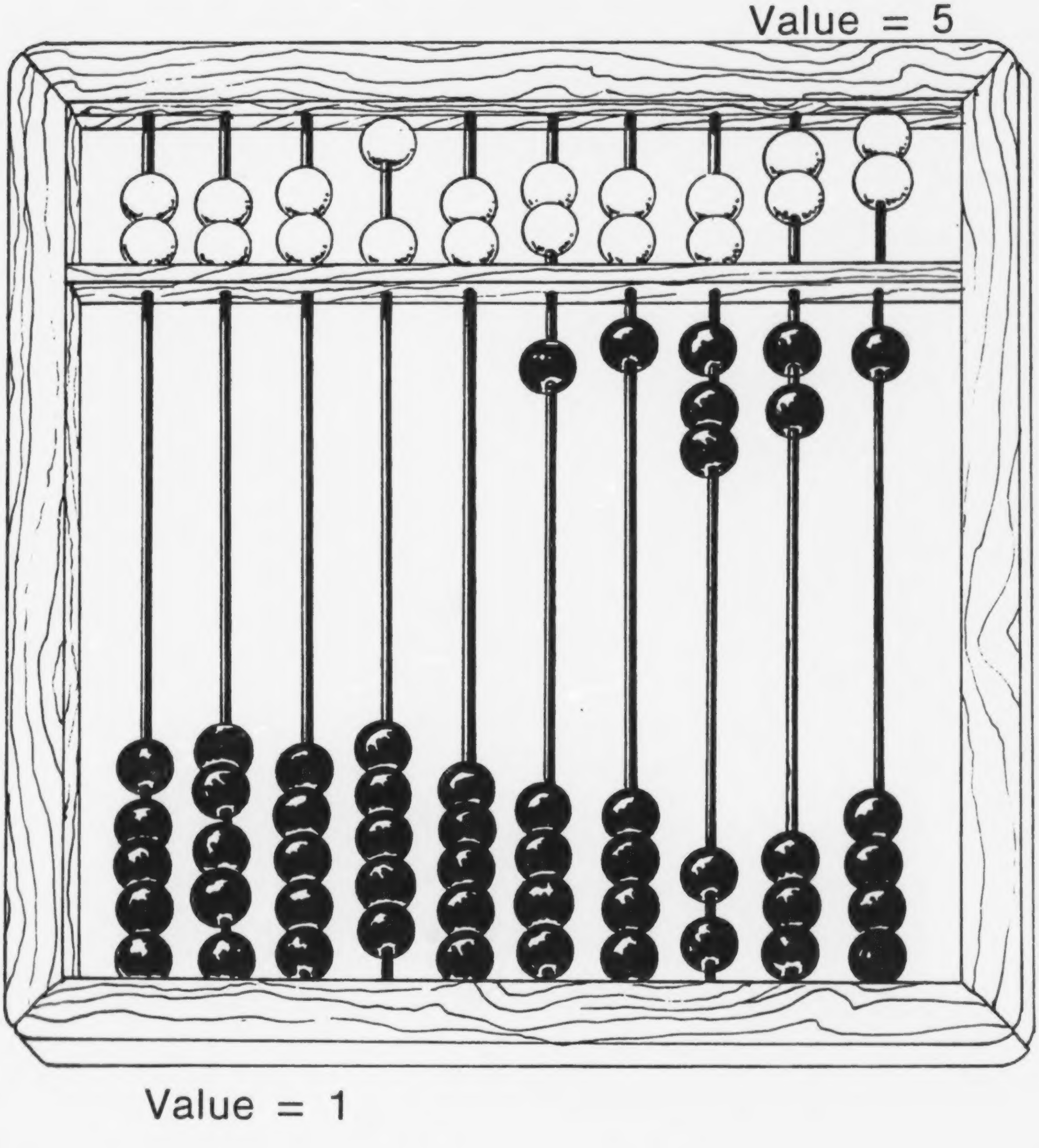


DIGITAL AND ANALOG DEVICES


0
10
20
30
40
50
60
70
80
Analog
Digital
373019

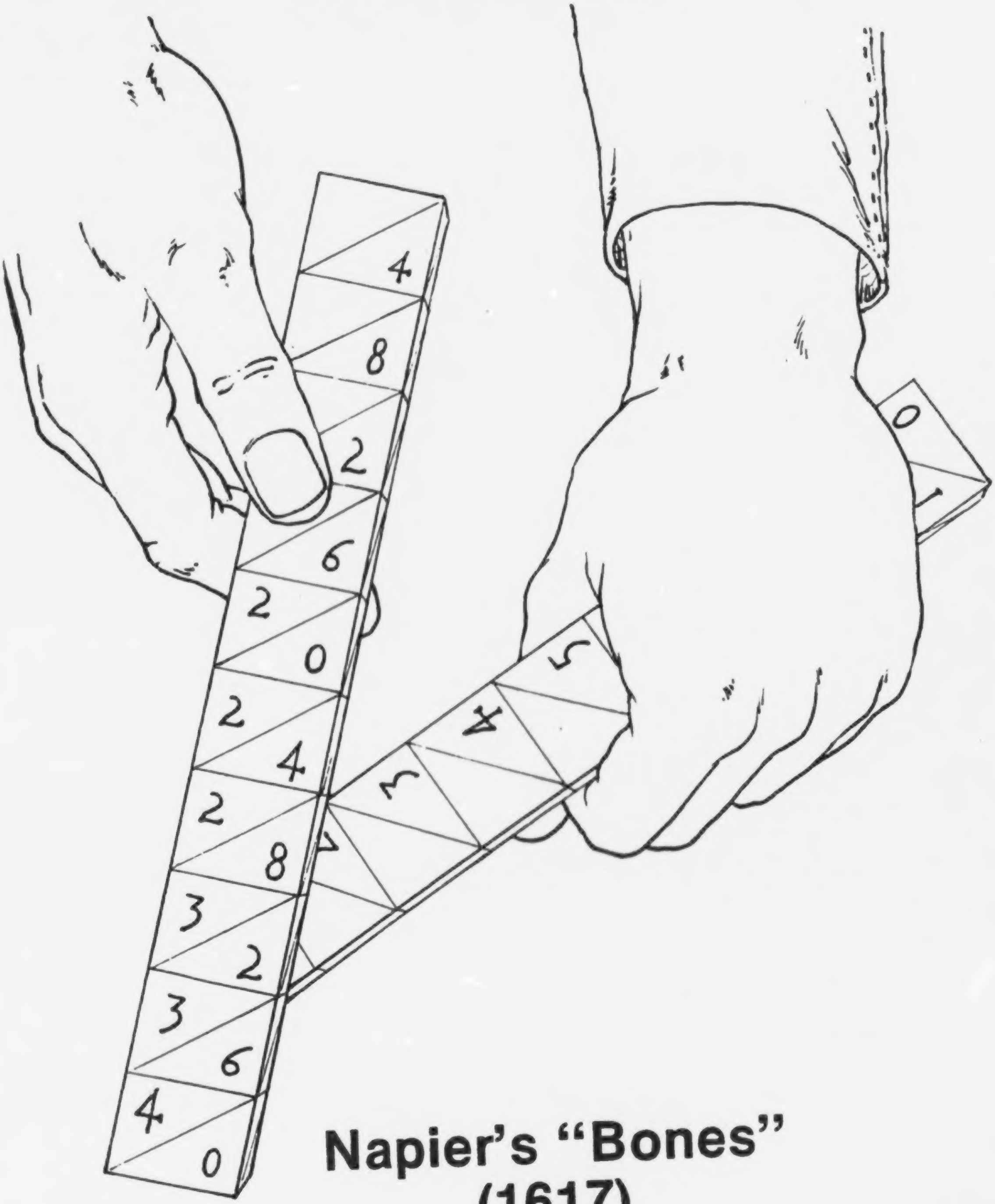
TM-12

ABACUS (3000 BC)



TM-13

NAPIER'S "BONES" (1617)


4
8
2
6
2 0
2 4
2 8
3 2
3 6
4 0
0
1
5
4
3
2

Napier's "Bones"
(1617)

SUPPLEMENTARY ACTIVITY

"WHO HAS" GAME

NOTE: **This game may be used with any unit.**

Materials needed: 30 index cards
black pen
word list

INSTRUCTIONS:

1. On one side of the index cards, draw a line that splits the cards in half. On one end, write, "I HAVE," and on the other end, write, "WHO HAS."

2. Use the word list to write "I HAVE" terms on the "I HAVE" end of the index card, and write the "WHO HAS" terms on the other end of the index card.

3. Shuffle all "I HAVE/WHO HAS" cards.

4. Deal one card per student until the deck is exhausted.

5. Choose a student to begin the activity by reading the bottom portion of the "WHO HAS" (question).

6. The student in the class having the answer to the "WHO HAS" question at the top of his card responds by reading his card, "I HAVE" (statement). He then reads the bottom portion of the card "WHO HAS" (question).

7. Play continues in this same manner until all terms and definitions have been used. The game ends by returning to the student who began the game.

"I HAVE" categories

1. ASCII
2. EBCDIC
3. Hardware
4. Peripheral
5. Software
6. Program
7. Programmer
8. User
9. Batch
10. Transaction
11. Auxiliary
12. Direct access
13. Sequential access
14. Compiler
15. Field
16. Record
17. File
18. Master file
19. Detail file
20. Backup copies
21. Assembly language
22. BASIC
23. FORTRAN
24. COBOL
25. PASCAL
26. RPG
27. PL/1
28. ADA
29. C
30. Machine language

"WHO HAS" categories

1. Coding scheme used on mainframes
2. Physical parts of a computer system
3. Input and output devices
4. Computer programs
5. Series of instructions which direct the computer
6. Person who writes programs
7. Person using the computer
8. Processing data as a group
9. Processing data individually
10. Secondary storage
11. Access of data in any order
12. Access of data one record after the other
13. Converts computer programs to machine language
14. One piece of information, such as a date or name
15. A group of fields
16. Group of related records
17. File which contains relatively permanent records
18. File which contains day-to-day transactions
19. Copies made in case the original is damaged
20. Language developed to make machine language easier
21. Primary language for micros
22. Oldest high-level language; used by scientists and mathematicians
23. Language used for business applications developed by the help of Dr. Grace Hopper
24. Used to teach beginners and named after a French inventor
25. Used to write reports
26. Developed by IBM; can be used in science and business applications
27. Used by the U.S. Department of Defense
28. Developed by AT&T; used with special effects in films
29. Difficult language to learn
30. Coding scheme used on microcomputers

SUPPLEMENTARY TESTS

MS-DOS COMMANDS TEST

INSTRUCTIONS: Give the appropriate MS-DOS command to accomplish the following requests.

(Note: Assume the current drive is A, unless the problem specifies differently.)

1. Information about the files on the disk in drive A.
2. Information about the files on the disk in drive B, giving one screenful at a time.
3. A list of the file names only on the disk in drive B.
4. Information about all .BAS files on the disk in drive B, if drive B is the current drive.
5. Copy the file named HOOP.BAS, which is on a disk in drive A, to a disk in drive B.
6. Copy the file name PROG1.CBL, which is on a disk in drive A, to a disk in drive B, giving the new file the name of PROGRAM1.CBL.
7. Copy everything in the current directory on drive A to drive B.
8. Delete everything in the current directory on drive A with the extension of BAK.
9. Delete the file CHAPT5.BAK, which is on the disk in drive B.
10. Rename the file ____________________ to ____________________. The file is on the disk in drive B, the current drive.

11. Display the content of AUTOEXEC.BAT, which is on the disk in drive A.

12. Format and put the system files on the disk in drive B.

13. Format the disk in drive B.

14. Format and put a volume label on the disk in drive A.

15. Check the disk in drive B for errors.

16. Make a subdirectory called WORD on the disk in drive A.

17. Change back to the root directory on the current drive.

18. Remove the empty subdirectory called WORK from the current drive.

19. Set the path to search drive A if drive B is the current drive.

MS-DOS TEST

Project 1

INSTRUCTIONS: Select the correct command for each description.

A. A:
B. BACKUP
C. CD
D. CHKDSK
E. CLS
F. COPY
G. DATE
H. DEL
I. DIR
J. DISKCOPY
K. KEYBFR
L. RD
M. EDLIN
N. FDISK
O. FIND
P. FORMAT
Q. MD
R. PRINT
S. PROMPT
T. REN
U. RESTORE
V. SORT
W. SYS
X. TREE
Y. TYPE
Z. MORE

____ 1. Used to create a subdirectory on the disk.

____ 2. Gives the number of files and bytes free on a disk.

____ 3. Erases a file from a disk.

____ 4. Displays the contents of a file on the screen.

____ 5. Displays the contents of a file on the printer.

____ 6. Allows the user to change the name of a file on disk.

____ 7. Displays the names of the files stored on a disk.

____ 8. Erases the screen.

____ 9. Used to enter the correct data into the computer.

____ 10. Allows the user to customize a DOS prompt.

____ 11. Changes from one subdirectory to another.

____ 12. Removes a subdirectory from the disk.

____ 13. Makes an exact copy of a file onto another disk.

____ 14. Makes an exact copy of one disk onto another disk.

____ 15. Initializes a disk for use.

____ 16. A filter that allows you to order information.

____ 17. A filter used to display one screen at a time.

____ 18. A simple line-editor word processor.

____ 19. Displays all directories and subdirectories.

Project 2

INSTRUCTIONS: Write brief answers to the following questions.

1. Describe two reasons for the use of extension names.

   a.

   b.

2. What is meant by an internal command?

3. What is meant by an external command?

4. Why is there a distinction between internal and external commands?

5. What is the purpose of the AUTOEXEC.BAT file?

6. What is the purpose of a batch file?

7. What are four characteristics of an operating system?

   a.

   b.

   c.

   d.

8. What are four categories of system software?

   a.

   b.

   c.

   d.

9. What happens when you format a disk?

10. List two good reasons for using subdirectories:

    a.

    b.

11. What are the two wild card symbols and their functions?

    a.

    b.

Project 3

INSTRUCTIONS: **Assume that MS-DOS is in drive A and that the data disk is in drive B. What are the commands to accomplish the following?**

1. Assume you are in drive B. What sequence of commands must you type to see a directory of drive A on a clear screen?

2. Assume you are in the root directory on drive A. What sequence of commands must you enter to copy a file named FRIEND.DAT from this directory to the subdirectory WORDS on drive B?

3. What keys must you press to do a soft reboot of the system?

4. Make a duplicate MS-DOS disk.

5. Add all files from drive A to B.

6. Get rid of all files that begin with a W.

7. Change the extension name of all files with the extension .DOC to .TXT.

8. Create a bootable disk.

9. Redirect the DIRectory output to the printer.

10. Display the contents of __________ document to the screen.

11. Display the contents of __________ document to the printer.

OPERATING SYSTEMS SKILLS TEST

INSTRUCTIONS: **Assume MS-DOS is in drive A and your data disk is in drive B for all applicable questions. List the commands to accomplish the following:**

1. Create a bootable data disk.

2. Put a volume label on a disk that has been formatted.

3. Put the system on a formatted disk.

4. Create a subdirectory for word processing, and within that subdirectory, create a subdirectory for storing documents.

5. From the root directory, change to the DOC subdirectory.

6. Copy a file from drive A to the DOC subdirectory.

7. Make a duplicate copy of a disk.

8. Copy all files from drive A to drive B.

9. Delete all files that start with F.

10. List all BASIC programs.

11. Echo the last DOS command.

12. Echo the last DOS command one character at a time.

13. Echo the last DOS command up to a specific letter.

14. Echo the last DOS command from a specific letter on.

15. Print the screen.

16. Rename a file DEMO.TXT.

17. Delete all files with the extension .SYS.

18. Clear the screen.

19. Remove the subdirectory DOC.

20. Copy a file from drive A to B, and give it a new name.

21. Copy a file to the same disk with a new name.

22. Return to the root directory from a subdirectory.

23. Return to the next upper level subdirectory, and you do not know the name of that subdirectory.

24. Display the current VOLUME label.

25. Display all directories and subdirectories.

26. Display the current version of DOS.

27. Change the current date.

28. Reboot the computer.

29. Display the contents of a text file on the screen.

30. Display the contents of a text file on the printer.

31. Copy a listing of the directory to disk.

32. Copy a listing of the directory to the printer.

33. Sort all files on disk by file name.

34. Sort all files on disk by extension name.

35. Create a batch file from the console.

36. Display the amount of free space on drive B.

37. Change the prompt to display the current directory.

38. All files on your data disk have your initials for an extension name. You recently changed your last name, and now you must change your initials on all the files.

39. Create a batch file that will be executed automatically when you boot the computer.

40. Create a batch file that will automatically start a program called WRITE in the subdirectory WORD when you type in the command TYPE.

41. Set up your data disk so that when you boot the computer, it will clear the screen and display a custom prompt showing the time and date on one line, the current directory on the next line, and followed by the > sign.

42. Search a disk for the file named ________________________.

43. Create a virtual (RAM) disk drive C with 100K of memory.

COMPETENCY TEST

PART I: COMPUTER-RELATED TERMINOLOGY

Project 1

INSTRUCTIONS: Fill in the correct term next to the appropriate definition.

______________ 1. Series of instructions telling the computer what to do.

______________ 2. Physical components of the computer system.

______________ 3. One piece of information, such as a name or date.

______________ 4. Copies made in case the original is damaged.

______________ 5. Used in measuring computer memory; equals 1024 bytes.

______________ 6. Access when data can be retrieved in any order.

______________ 7. Coding scheme used on microcomputers.

______________ 8. Device used to connect computers through phone lines.

______________ 9. Equals one character.

______________ 10. Person who writes programs.

______________ 11. A program that interprets computer statements written in another language and converts them to machine language.

______________ 12. A group of fields.

______________ 13. Access when data are retrieved one record after the other.

______________ 14. All instructions and information necessary to make the computer function.

______________ 15. A term used when referring to input and output devices.

______________ 16. A binary digit, zero or one.

______________ 17. A term used for secondary storage.

______________ 18. The accumulating and processing of data as a group.

______________ 19. A file that contains relatively permanent records.

______________ 20. A group of related records.

______________ 21. Computers which work by numbers and a set of instructions.

______________ 22. Processing data one record at a time.

______________ 23. Computers that measure physical conditions.

______________ 24. Transmission of data from one computer to another.

______________ 25. One letter, number, or symbol.

PART I (Continued)

Project 2

INSTRUCTIONS: Place the appropriate letter in the blank provided.

A. Charles Tandy
B. Nolan Bushnell
C. Stephen Wozniak
D. Herman Hollerith
E. H. Ross Perot
F. Jack Kilby
G. John Kemeny
H. Grace Hopper
I. Steve Jobs
J. Thomas Kurtz
K. Jack Tramiel
L. IBM
M. Adam Osborn
N. Mitch Kapor
O. Daniel Bricklin
P. *VisiCalc*

_______ 1. Navy commander who contributed to the writing of the COBOL programming language.

_______ 2. The Hollerith Company was purchased, and its name was changed to ___.

_______ 3. Invented a punched card process used in the 1890 census.

_______ 4. Turned a hobby and supplies business into an electronic conglomerate.

_______ 5. Founder of Electronic Data Systems.

_______ 6. Developed the most widely used spreadsheet program, *Lotus 1-2-3*.

_______ 7. Responsible for developing the first BASIC program in 1964.

_______ 8. Introduced the Commodore series of computers.

_______ 9. Introduced a computer that will fit under an airplane seat.

_______10. One of the men who produced the original Apple computer.

_______11. The first electronic spreadsheet program.

_______12. Developed the NeXt Company for applications in a college environment.

_______13. Invented the microchip.

_______14. Wrote the first electronic spreadsheet.

_______15. Known as the entrepreneur who began the Atari video game computer.

PART II: FUNCTIONS OF DATA PROCESSING

INSTRUCTIONS: Define each function of data processing.

1. Data collecting

2. Recording

3. Sorting

4. Classifying

5. Calculating

6. Storing and retrieving

7. Summarizing

8. Communicating

PART III: PARTS OF THE INFORMATION PROCESSING CYCLE

Project 1

INSTRUCTIONS: List and describe each step of the information processing cycle.

1.

2.

3.

4.

83

PART III (Continued)

Project 2

INSTRUCTIONS: List two parts of the processor and two parts of the CPU.

Processor

1.

2.

CPU

1.

2.

PART III (Continued)

Project 3

INSTRUCTIONS: **Draw the parts of the computer processor.**

PART IV: MICROCOMPUTER OPERATING SYSTEMS

1. What is the name of the operating system that you use?

2. What happens in the initializing operation.

3. According to your operating system's documentation, what are the internal commands available? external commands?

   Internal commands

   External commands

PART V: EVENTS IN HISTORY

Project 1

INSTRUCTIONS: **Select the appropriate answer for each of the questions concerning the history of data processing. Place your answer in the space provided.**

_____ 1. This device was not a computer, but it used data processing techniques in the 1800's.

A. Napier's bones
B. Abacus
C. Jacquard's loom
D. Leibnitz wheel

_____ 2. This machine was never built, but the concepts in the design were similar to the concepts of today's computers.

A. Analytical engine
B. ENIAC
C. Leibnitz wheel
D. Abacus

_____3. The Orientals used this as a counting device.

A. Napier's bones
B. Abacus
C. Leibnitz wheel
D. Machine arithmetic

_____4. The counting of the US Census was done with the help of this device.

A. Analytical engine
B. Hollerith's punched card
C. Mark I
D. ENIAC

_____5. This calculator operated by turning dials.

A. Machine arithmetic
B. Napier's bones
C. Abacus
D. Jacquard's loom

_____6. Considered to be the "Father of Computers."

A. Herman Hollerith
B. Blaise Pascal
C. Joseph Jacquard
D. Charles Babbage

_____7. Considered to be the first programmer.

A. Charles Babbage
B. Ada Lovelace
C. Blaise Pascal
D. John Napier

_____8. The first computer to be used commercially.

A. ENIAC
B. UNIVAC I
C. Mark I
D. EDSAC

_____ 9. Considered to be the first electronic computer.

A. Mark I
B. UNIVAC I
C. EDSAC
D. ENIAC

_____10. First machine to use the stored-program concept.

A. Mark I
B. UNIVAC I
C. EDSAC
D. ENIAC

11. Write a paragraph about the five computer generations, distinguishing each generation from the other.

PART VI: MICROCOMPUTER OPERATING SYSTEMS

1. What is the name of the operating system that you use?

2. What happens in the initializing operation?

3. According to your operating system's documentation, what are the internal commands available? external commands?

   Internal commands

   External commands

PART VII: PRODUCTIVITY AND COMPUTER-RELATED TOOLS

Project 1

INSTRUCTIONS: **Using the information you learned in this unit, list four (4) computer-related tools that have increased productivity.**

1.

2.

3.

4.

PART VII (Continued)

Project 2

INSTRUCTIONS: Differentiate among each of the following.

1. LAN
2. Star network
3. Ring network
4. Bus network

Project 3

INSTRUCTIONS: Define database, and in your own words, explain why databases are important.

ANSWERS TO ACTIVITIES

Activity 1

```
MENU     F         P
     EBCDIC        R
  A C A  E         O
 OUTPUT  L         G
S X U C  D         R
O I   H    D     R A
FILE    D KILOBYTE M
T I B   I  G  A  C M
W ASCII P  I  C  O E
A R D   E  T  K  R R
R Y     C  A  U  D
E SEQUENTIAL  P    C
  T         H      O
 MODEM      A  MODEM
  R         R      P
  ANALOG    D      I
  G         W      L
USER   TRANSACTION E
            R      R
DATASTRUCTURE
```

Activity 2

1. **Summarizing--**condensing data and information.
2. **Calculating--**performing mathematical operations.
3. **Data collecting--**collecting raw data that need to be processed.
4. **Sorting--**putting data in ascending /descending alphabetical or numeric order.
5. **Communicating--**transferring data from one place to another.
6. **Recording--**putting data in some form that is recognizable by human or machine.
7. **Storing and retrieving--**storing data on some type of media for future use.
8. **Classifying--**arranging data according to some logical relationship.

Activity 3

Project 1

The diagram of the information processing cycle should include the following in this order:

Input--putting raw data into the computer to be processed;
Processing--manipulating the data to get a desired result;
Output--communicating the answer to the user; and
Storage--where the data is kept outside of the computer memory for future use.

Project 2

Processing cycle designs should include the following steps:

1. Gathering information.
   Arranging information.
   Putting the completed research on paper.
2. Gathering ingredients.
   Mixing and/or cooking ingredients.
   Serving the finished product, such as a cake or hamburger.
3. Gathering miles per gallon and amount of gas used.
   Dividing miles per gallon by amount of gas used.
   Displaying the final mileage total.
4. Gathering the rate of pay and hours worked.
   Multiplying rate of pay times hours worked and subtracting deductions.
   Displaying the final salary total.
5. Gathering and recording grades.
   Adding grades and dividing by the total number of grades.
   Displaying the final answer.
6. Interviewing applicants.
   Comparing applicants and choosing the one most qualified.
   Hiring the applicant.

Project 3

The diagram of the processor should resemble suggested Transparency 9.

Project 4

1.	A	4.	D
2.	D	5.	C
3.	C	6.	B

Activity 4

Project 1 Answers will vary according to the instructor's lecture and textbook used. Evaluated to the satisfaction of the instructor.

Project 2

1.	B	4.	E	7.	B	10.	C
2.	D	5.	D	8.	E	11.	D
3.	C	6.	C	9.	B	12.	A

Project 3 This report will vary according to the six employees interviewed by the student. Evaluated to the satisfaction of the instructor.

Project 4 Computer system posters will be evaluated to the satisfaction of the instructor.

Activity 5

Project 1

1.	F	5.	J	9.	B
2.	G	6.	A	10.	I
3.	D	7.	L	11.	C
4.	K	8.	E	12.	H

NOTE: **Dates may vary depending on textbook used.**

Project 2 A time line showing and describing each development in computer history will be evaluated to the satisfaction of the instructor.

Project 3 Answers will vary depending on the invention chosen. Report evaluated to the satisfaction of the instructor.

Project 4 Evaluated to the satisfaction of the instructor.

Activity 6

1. MS-DOS 1.0 1981
   Version 1.1
   Version 2.0 1982
   Version 2.1
   Version 3.0 1984
   Version 3.2 1985
   Version 3.3 1987
   Version 4.0 1988

2.-5. Evaluated to the satisfaction of the instructor.

Activity 7

Project 1 Evaluated to the satisfaction of the instructor.

Project 2 Evaluated to the satisfaction of the instructor.

MS-DOS COMMANDS TEST

ANSWERS

```
1.   A> DIR

2.   A> DIR B: /P

3.   A> DIR B: /W

4.   B> DIR *.BAS

5.   A> COPY HOOP.BAS  B:

6.   A> COPY PROG1.CBL  B:PROGRAM1.CBL

7.   A> COPY *.*  b:

8.   A> DEL *.BAK

9.   A> DEL B:CHAPT5.BAK

10.  B> RENAME BUDGET01.WKS  BUDGET10.WKS

11.  A> TYPE AUTOEXEC.BAT

12.  A> FORMAT B:/S

13.  A> FORMAT B:

14.  A> FORMAT /V

15.  A> CHKDSK B:

16.  A> MKDIR WORD                A>MD WORD

17.  >CD\

18.  >RMDIR WORK                 >RD WORK

19.  B> PATH A:\
```

MS-DOS TEST

ANSWERS

Project 1

1.	Q	7.	I	13.	F
2.	D	8.	E	14.	J
3.	H	9.	G	15.	P
4.	Y	10.	S	16.	V
5.	R	11.	C	17.	Z
6.	T	12.	L	18.	M
				19.	X

Project 2

1. a. Computer--distinguish file types to know if they are executable, commands, batch, or other.
   b. Human--distinguish files by types and for organizing files.

2. A DOS command that is part of the operating system. It is loaded when you boot the computer.

3. A DOS command that remains on disk. It is loaded into memory only when it is needed, thus saving primary memory space.

4. When MS-DOS was first created, memory was "prime real estate." All the operating system commands could not fit in primary memory. Therefore, the less used commands were left out of the operating system to conserve primary memory.

5. The AUTOEXEC.BAT file is a batch file that will automatically execute when the computer is first booted.

6. A batch file is a list of DOS and special commands stored in a file and are executed as if they were typed in from the keyboard.

7. a. Communication between primary memory and peripheral devices
   b. Method of transferring data from RAM to disk and from disk to RAM
   c. Data management
   d. Commands that allow you to manipulate the computer

8. a. Operating system
   b. Utilities
   c. Language processors
   d. User interface shell

9. a. Erases anything that was on the disk.
   b. Sets up tracks and sectors.
   c. Creates the boot area.

d. Creates the FAT area.
e. Creates the root directory area.
f. Blocks out any bad sectors.

10. a. To organize files into different directories; keep all similar files in individual directories.
    b. Limitation of the root directory necessitates the use of subdirectories.

11. a. ?--replaces single character.
    b. *--replaces 1 to 8 characters.

Project 3

```
 1.  B>A:
     A>CLS
     A>DIR /W

 2.  A>COPY FRIEND.DAT  B:\WORDS\

 3.  CTRL-ALT-DELETE

 4.  A>DISKCOPY A:  B:

 5.  A>COPY *.*  B:

 6.  A>DEL W*.*

 7.  REN *.DOC  *.TXT

 8.  A>FORMAT B:/S

 9.  A>DIR > PRN

10.  A> _________.DOC

11.  A>PRINT _________.DOC or A>TYPE _________.DOC > PRN
```

OPERATING SYSTEMS SKILLS TEST

ANSWERS

1. A>FORMAT B:/S
2. A>LABEL B:
3. A>SYS B:
4. A>MD WORD
   A>CD WORD
   A>MD DOC
5. A>CD \WORD\DOC
6. A>COPY filename.ext
   \WORD\DOC
7. A>DISKCOPY A: B:
8. A>COPY *.* B:
9. A>DEL F*.*
10. A>DIR *.BAS
11. F3
12. F1, or right arrow key
13. F2, then specified character
14. F4, then beginning character
15. Shift-PRTSCN
16. A>REN DEMO.TXT
    DEMO1.TXT
17. DEL *.SYS
18. CLS
19. A>CD \WORD\DOC change to DOC subdirectory
    A>DEL *.* delete all files in DOC directory

    A>CD \WORD change to WORD directory
    A>RD DOC remove DOC directory
20. A>COPY filename.ext
    B:newname.ext
21. A>COPY filename.ext
    B:newname.ext
22. A>CD\
23. A>CD.
24. A>TREE
25. A>VOL
26. A>VER
27. A>DATE
28. CTRL-ALT-DELETE
29. A>TYPE filename.ext
30. A>PRINT filename.ext
    or A>TYPE filename.ext > PRN
31. A>DIR > filename.ext
32. A>DIR > PRN
33. A>SORT | DIR
34. A>SORT | DIR /+8

35.
```
A>COPY CON filename.BAT
```

36.
```
A>CHKDSK  B:
```

37.
```
A>PROMPT $P$G
```

38.
```
A>REN *.INT  *.INS
```

39.
```
A>COPY CON AUTOEXEC.BAT
```

40.
```
A>COPY CON TYPE.BAT
ECHO OFF
CD \WORD
WRITE
^Z
```

41.
```
A>COPY CON AUTOEXEC.BAT
ECHO OFF
CLS
PROMPT $T  $D$_$P$G
```

42.
```
A>DIR MORE.COM
```

43.
```
A>COPY CON CONFIG.SYS
DEVICE=VDISK.SYS,100
```

COMPETENCY TEST ANSWERS

Part I

1. Program
2. Hardware
3. Field
4. Backups
5. K
6. Random/direct
7. ASCII
8. Modem
9. Byte
10. Programmer
11. Compiler
12. Record
13. Sequential
14. Software
15. Peripheral
16. Bit
17. Auxiliary
18. Batch
19. Master
20. Files
21. Digital
22. Transaction
23. Analog
24. Data communications
25. Character

Part II

1. Data collecting is collecting raw data that need to be processed.
2. Recording is putting data in some form that is recognizable by person or machine.
3. Sorting is putting data in ascending/descending alphabetical or numerical order.
4. Classifying is arranging data according to some logical relationship.
5. Calculating is performing mathematical operations.
6. Storing and retrieving is putting data on some type of media for future use.
7. Summarizing is condensing data and information.
8. Communicating is transferring data from one place to another.

Part III

Project 1

1. **Input**--entering raw data into the computer to be processed.
2. **Process**--manipulating data to achieve a desired result.
3. **Output**--communicating the result to the user.
4. **Storage**--storing programs and data outside of the main memory for future use.

Project 2

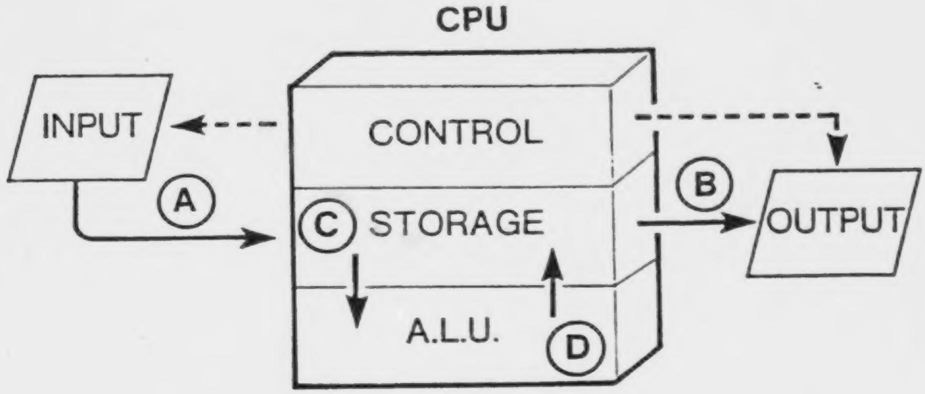
Processor
1. Arithmetic/logic unit
2. Control unit

Part III (Continued)

Project 2 (Continued)

CPU
1. Read only memory
2. Random access memory

Project 3


CPU
INPUT
CONTROL
A
C
STORAGE
B
OUTPUT
A.L.U.
D

Part IV Evaluated to the satisfaction of the instructor.

Part V

Project 1

1. C
2. A
3. B
4. B
5. A
6. D
7. B
8. B
9. D
10. A

11. Evaluated to the satisfaction of the instructor.

Project 2

1.	H	6.	N	11.	D
2.	L	7.	G	12.	I
3.	D	8.	K	13.	F
4.	A	9.	M	14.	O
5.	E	10.	C	15.	B

Part VI Evaluated to the satisfaction of the instructor.

Part VII

Project 1 Any four of the following may be listed.

1. Word processing
2. Networks
3. Decision support systems
4. Artificial Intelligence
5. Expert systems
6. Office automation
7. Databases

Project 2 Evaluated to the satisfaction of the instructor.

Project 3 Evaluated to the satisfaction of the instructor.

COMPETENCY CHECKLIST

ESSENTIAL ELEMENT: 75.87(e)(1), (5)(A)

The student will be provided opportunities to demonstrate comprehension of computer-related vocabulary, describe the functions of the components of a computer system, demonstrate and apply the capabilities of an operating system, and discuss integration of people and computers for productivity.

OBJECTIVE:	**Students will demonstrate the ability to understand computer processing concepts.**	**MASTERY**	**NON-MASTERY**
1.	**Identify basic computer-related terminology.**	________	________
2.	**Outline the functions of data processing.**	________	________
3.	**Illustrate the parts of the information processing cycle and explain how each part is interdependent within the cycle.**	________	________
4.	**Illustrate parts of the computer processor.**	________	________
5.	**Compare the similarities and differences among various computer systems.**	________	________
6.	**Outline the events in history pertinent to breakthroughs in data processing.**	________	________
7.	**Describe and apply the capabilities of an operating system.**	________	________
8.	**Explain how the use of computer-related tools can increase productivity in an organization.**	________	________
		________	________
		________	________

STUDENT NAME____

SECTION I: INTRODUCTION TO BUSINESS COMPUTER APPLICATIONS I

UNIT I: INTRODUCTION TO THE COURSE

UNIT OBJECTIVE: Students will develop an understanding of the purpose, contents, and organization of the course Business Computer Applications I.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Relate the purpose of Business Computer Applications I to office education, business, and industry.
2. Recognize the role of the youth organization relative to Business Computer Applications I.
3. Discuss course objectives, equipment, units, competencies, and evaluation measures.
4. Explain classroom organization, management, and safety.

FOCUS: Students will be provided the opportunity to develop and use both academic and vocational skills that will be useful whether they are taking advanced courses or making the transition from high school to the world of work.

TERMINOLOGY

Business Computer Applications I	An occupationally specific course under the umbrella of office education for students to learn and apply computer applications skills.
Business Professionals of America	A youth organization designed to provide opportunities for growth and development of the business, office, and leadership skills.
Classroom management	Policies and procedures for general classroom operations which enhance the learning environment.
Classroom organization	Arrangement of classroom machines, equipment, furniture, or seating which provides for optimum instruction.
Cluster course	A foundation course which includes concepts and skills that are needed in office occupations.
Competency	The ability to do something.
Competency checklist	A listing of competencies indicating mastery or nonmastery of each.
Evaluation measures	Methods for evaluating student performance.
Occupational specific course	A course which develops skills needed to perform a specific occupation.
Office education	One of the program areas which provides for vocational education in office-related occupations.
Safety precautions	Following and applying safety awareness in an office environment.
Units of instruction	Identification of specific topics to be taught during a course.

UNIT OVERVIEW

I. Purpose of course

A. Business Computer Applications I is one of the occupational specific courses coming under the umbrella of office education. Office education is one of several vocational-technical program areas which combines education and job training.

1. The main goal of the office education courses is to deliver instruction that will provide the student with:

   a. Marketable skills.

   b. Knowledge.

   c. Attitudes that will be useful upon graduation.

2. In addition to this primary goal, office education benefits students in other ways by:

   a. Assisting in making the transition from high school to the world of work.

   b. Providing experiences for developing leadership skills.

   c. Assisting with making career choices.

   d. Developing skills, knowledge, and attitudes needed in assuming adult responsibilities.

3. Students enrolled in Business Computer Applications I have an opportunity to participate in youth organization activities at the local, state, and national levels through Business Professionals of America. Business Professionals of America encourages students to participate in state and national conferences organized to enhance leadership skills. It is the **only** approved student organization for students enrolled in Business Computer Applications I.

   a. History of Business Professionals of America

   b. Competitive events

      (1) Events consist of various contests which provide opportunities for competition with students from other schools.

      (2) Students learn sportsmanship by:

         (a) Being a gracious winner.

(b) Being a gracious loser.

c. Leadership opportunities

(1) Opportunities are available to run for state or national office.

(2) To be elected as an officer by one's peers is an honor.

(3) With honor comes responsibility, this means:

(a) Putting the organization first.

(b) Speaking in front of groups.

(c) Planning conferences.

B. Objectives of Business Computer Applications I

1. The content of this course has been developed from the essential elements required by the State Board of Education.

2. The objectives of these essential elements are to provide learning experiences that will enable students to acquire competency in performing basic tasks relative to office occupations.

C. **Relationship of Business Computer Applications I to business**--this course has been developed to provide fundamental concepts and skills needed by general office workers.

1. This course is considered as a foundation course, meaning the content would be useful in any office position. It is composed of instructional activities that will be helpful in getting an office job or in providing the foundation needed before taking more advanced office-related courses.

2. Job market projections indicate that office workers will continue to be in demand.

a. Regardless of the type of business, people will be needed to handle the clerical operations of the company.

b. Chances for advancement are good for the office worker.

c. Some companies offer incentives such as paying part or all of tuition, fees, and books for employees who further their education. Business Computer Applications I is considered a steppingstone into the business and office world.

II. Course overview

A. **Classroom equipment**--the office equipment needed for Business Computer Applications I has been determined by the essential elements and by the course competencies. The equipment reflects the current skills needed by the beginning office worker.

B. **Units**--Business Computer Applications I includes 13 units, falling under the following sections:

1. **Introduction to Business Computer Applications I**--review of purposes, information, and activities; classroom organization; evaluation techniques; safety measures; and computer-related operations.
2. **Word Processing**--word processing concepts and applications.
3. **Electronic Spreadsheets**--spreadsheet concepts and applications.
4. **Database Management**--database management concepts and applications.
5. **Computer Communication Tools**--concepts of telecommunications, computer graphics, desktop publishing, and business application software.
6. **Social Implications of Computer Usage**--issues and technological developments related to computers and society.
7. **Closure of Course**--review of course, with emphasis on competencies gained from the course.

C. **Competencies**--a *competency* means the ability to do something. The ability to do something includes attitudes, values, skills, and/or knowledge. Most of the competencies included in this course are job-related. This means that these competencies are needed to perform an office job.

1. A competency check list is included at the end of each unit.
2. All competencies need to be reviewed before beginning unit lessons.

D. **Evaluation**--a variety of methods are used to evaluate performance and knowledge. Some of the methods might include:

1. In-class activities.
2. Outside assignments.
3. Skill production.
4. Tests.

E. Classroom organization and management

1. The organization of the classroom has been established to provide optimum experiences for learning. Class size and number of machines are determining factors in classroom organization.

2. For management purposes, it is necessary to establish policies and/or procedures to ensure quality of performance. For example:

    a. Care of equipment

    b. Use of supplies

F. Safety

1. Office workers often feel secure when it comes to safety. However, the office worker should take responsibility for learning more about the office setting and the office job itself. The beginning worker does not yet have the experiences to realize the potential danger involved.

2. Companies give much thought and planning to developing a safe, secure environment for their employees. Many elements are taken into consideration to provide facilities and programs that will contribute to the well-being of the people who work in offices.

3. One of the areas of concentration is office design. Companies plan for:

    a. Attractive and efficient surroundings.

    b. Good lighting for sufficient illumination for the work area.

    c. Special materials on floors and walls to absorb loud or irritating noises caused by office equipment.

4. Ninety percent of office accidents result from unsafe actions or conditions.

    a. Slipping, tripping, or falling

    b. Improper use of equipment

    c. Obstructions

    d. Fire

    e. Electricity

5. The federal government has developed special guidelines to provide for safe and healthful work environments. However, employees must do their part. Some of the things employees can do to contribute to office safety are as follows:

    a. Use good judgment.

    b. Observe and follow safety procedures.

    c. Use safety precautions.

    d. Avoid horseplay while on the job.

    e. Avoid becoming too emotional, which can lead to loss of control.

    f. Do not use alcoholic beverages or drugs.

    g. Avoid overloading electrical circuits.

    h. Keep walkways clear.

    i. Report frayed or damaged electrical cords.

    j. Close desk, file, or other drawers before leaving the work area.

    k. Immediately unplug any machine or electrical appliance which smells like smoke.

    l. Be careful when sitting in rolling chairs or one that leans back too far.

    m. Avoid unsafe dress and grooming practices.

    n. Have proper ventilation.

    o. Be aware that sharp-pointed objects are hazardous.

6. **In case of an accident**--the office worker should know the company policies regarding injuries or accidents. The following steps are usually part of the procedures to follow:

    a. Turn off power.

    b. Administer first aid.

    c. Report all accidents and injuries.

    d. Take injured person to hospital emergency room.

7. **Fire safety**--some general procedures should be followed relative to fire prevention:

   a. Report a fire quickly.

   b. Know the types of extinguishers.

   c. Know location of fire extinguishers and how to use them.

   (**WARNING: DO NOT** play with firefighting equipment, because it may not work when you need it.)

   d. Know the location of the fire alarm, or notify the office.

   e. Keep a clean work area with flammable items stored properly.

   f. Know the correct way to leave a building in case of a fire.

SECTION I: INTRODUCTION TO BUSINESS COMPUTER APPLICATIONS I

UNIT II: COMPUTER-RELATED CONCEPTS

UNIT OBJECTIVE: Students will demonstrate the ability to understand computer processing concepts and productivity.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Identify basic computer-related terminology.
2. Outline the functions of data processing.
3. Illustrate the parts of the information processing cycle and explain how each part is interdependent within the cycle.
4. Illustrate parts of the computer processor.
5. Compare the similarities and differences among various computer systems.
6. Outline the events in history pertinent to breakthroughs in data processing.
7. Describe and apply the capabilities of an operating system.
8. Explain how the use of computer-related tools can increase productivity in an organization.

FOCUS: Knowledge of general computer operation and background is necessary in order to understand the more complex computer programs.

1. The ability to identify basic computer-related terms is essential in the day-to-day use of computer-related concepts.
2. Understanding each part of the information processing cycle and how the parts work together is imperative. The student can then process data and, at the same time, understand how the data were processed.
3. Identification of various computer systems is important in choosing the system most suitable for the task at hand.

4. Understanding the history of data processing is necessary to understand the development of computers.

5. Categorization and definition of computer languages allow the student to decide which language is most effective in specific problem solving.

TERMINOLOGY

Analog	Computers which measure continuously and are designed to translate physical conditions such as temperatures, pressure, and voltage in large quantities. Used mainly by scientists and engineers.
Artificial Intelligence (AI)	A field of study involving techniques in which computers can formulate responses on the basis of content of accumulated and experience-related information.
Assembly language	Developed in the early 1950s to make using machine language easier. Replaced the binary code with symbolic names that are easier to remember.
Auxiliary storage	Generally magnetic tapes or magnetic disks on which data can be stored outside of the computer. Secondary storage also refers to auxiliary storage.
ASCII	American Standard Code for Information Interchange. ASCII is the most commonly used coding scheme today. It has a maximum character set of 128 codes; 0 through 127. Used mostly with microcomputers.
Backup copies	Copies made of programs and data in case the original is damaged or destroyed.
Batch processing	The accumulation and processing of data as a group. Payrolls for large companies are usually completed through batch processing.
BCD	Binary-Coded Decimal was designed to encode numeric information in a manner that would be easier than straight binary to convert into decimal. Each decimal digit in a decimal value is translated into its binary equivalent and is recorded in BCD position which contains four bits.
Bus network	A network which processes data sequentially; all terminals send and receive.
Character	A single letter, number, special symbol. One character equals one byte.
Compiler	A program that interprets computer statements written in a symbolic form and converts the statements to machine language instructions.
CPU	Central Processing Unit is where all processing in the computer takes place.

Database	A collection of data that is correctly organized to reduce redundancy and correctly designed for easy access to the data.
Data communications	Transmission of data from one computer to another.
Data processing	The handling or manipulating of information in order to achieve a desired result.
Data structure	The arrangement of data for storing.
Decision support system (DSS)	An information-producing system aimed at a particular decision that a manager must make.
Detail file	A file that contains a record of day-to-day transactions.
Digital	A computer that works by numbers and follows a set of instructions. For example, the computers used in the classroom are digital.
Direct access	Data can be stored and retrieved in any order. Also known as random access.
EBCDIC	Extended Binary-Coded Decimal Interchange Code is an eight-bit code that accommodates as many as 256 different characters. Usually the standard coding scheme for mainframes and minicomputers.
Expert system (ES)	A program that mimics the decision-making logic of human experts.
Field	One piece of information, such as a name, address, or date.
File	A group of related records treated as a unit.
Hardware	Everything you can touch; just what the name implies, the physical parts associated with the computer. *Peripheral* is another term which refers to input and output devices connected to the computer.
High-level language	A computer language that uses English-like commands.
Input	The raw data that need to be processed.
K	A measurement of a computer's memory, 1024 bytes.
LAN	A private network of computers and access devices localized within a limited geographic area.
Machine language	A computer language expressed in binary notation.
Master file	A file that contains relatively permanent records.

Menu	A list of options provided to the user by the computer program.
Modem	A device used in data communications to connect computers through phone lines.
Output	Communicating the results of the processing of the user.
Processing	When the facts are manipulated to produce results.
Program	A series of instructions which directs the computer to perform a sequence of tasks that produces a desired output.
Programmer	Person who designs, writes, tests, and implements the programs which process data.
Record	A group of related fields.
Ring network	A type of network that works from one host computer; however, the terminals may still communicate among themselves in a clockwise sequence.
Robotics	The use of automated, often computer-controlled, equipment for production work and other mechanical tasks.
Sequential access	Data retrieved from a file one record after another in a predetermined sequence.
Software	All instructions and information necessary to make the computer function. Computer programs used to accomplish specific applications are considered to be software.
Star network	A type of network that works from one main host; the individual terminals may communicate among themselves in a crisscross fashion or in sequence.
Transaction processing	Processing data one record at a time. Making airline reservations is done as transaction processing.
User	The person using the computer.

UNIT OVERVIEW

I. **Definition of data processing**--the handling or manipulating of information in order to achieve a desired result.

II. Functions of data processing

   A. **Data collecting**--collecting raw data that need to be processed.

   B. **Recording**--putting data in some form that is recognizable by person or machine.

   C. **Sorting**--putting data in ascending/descending alphabetical or numerical order.

   D. **Classifying**--arranging data according to some logical relationship.

   E. **Calculating**--performing mathematical operations.

   F. **Storing and retrieving**--storing data on some type of media for future use.

   G. **Summarizing**--condensing data and information.

   H. **Communicating**--transferring data from one place to another.

III. Information processing cycle consists of four steps: input, processing, output, and storage. After data have been processed, they must be stored for further use. All functions of data processing are used in the information processing cycle.

   A. **Input**--the raw data that need to be processed. Before data can be processed, they must be entered into the computer. An example of raw data is three scores that need to be averaged: 80, 85, 90. Data are input into the computer by input devices. It is very important that the correct data are input in order for the processing to be done correctly. If the input is wrong, the output will be wrong.

   B. **Processing**--when the facts are manipulated to produce results. The average of the three scores is the process: (80+85+90)/3. The data are processed in the processor. The processor is considered to be the brain of the computer and has five functions: (1) makes logical decisions; (2) makes arithmetic computations; (3) serves as temporary storage; (4) edits and moves data; and (5) controls input and output devices.

      1. **Central processing unit**--all processing in the computer goes through the CPU, which is divided into two parts.

         a. **Arithmetic/logic unit**--allows comparisons to be made in order to make logical decisions.

         b. **Control unit**--controls all operations of the processor.

2. **Main memory**--considered to be primary storage; it is used for current computations.

    a. **Read-only memory (ROM)**--contains chips that store permanent instructions for the computer. The user has no access to this memory to erase it.

    b. **Random-access memory (RAM)**--where programs in use are stored. This memory also stores data before they are recorded outside of the computer. An example is a report being typed using a word processing program. The report is stored in RAM until it is recorded on a disk. The memory is erased when the computer is turned off. If the program is to be used again, it must be reloaded into the main memory.

C. **Output**--communicating the results of the processing to the user. Output devices deliver the results of the processing. The output given for the grade average would be 85. This could be displayed on the screen or perhaps printed on paper.

D. **Auxiliary storage**--storage outside of the main storage area. Auxiliary storage is needed in all types of computer systems. It expands memory capacity and allows access to data.

1. Secondary storage media

    a. **Magnetic tape**--cassette tapes or tape drives are popular storage devices. The tape is oxide-coated mylar, and the data are stored as magnetic spots.

    b. **Magnetic disk**--data are recorded as magnetized spots. These disks may be either floppy or hard, and they are available in several sizes. Information is recorded on and read from the disks by a read/write head located in the disk drive, which senses the magnetic spots.

    c. **Laser disk**--data are stored by burning holes in the surface with a laser beam.

    d. **Bubble memory**--contains small magnetic bubbles on a thin, single-crystal film of synthetic garnet. The presence or absence of a bubble is "on" or "off."

2. Types of access to stored data

    a. **Sequential**--data are retrieved in the order they were stored, one record after another. This type of access is mainly used for batch processing. It is the only retrieval method that can be used for magnetic tape.

b. **Direct**--also known as **random-access**. Records can be read in any order, regardless of how they were stored. Magnetic disks are direct-access devices.

IV. **Types of computers**--Computer systems vary widely in how the hardware is designed. However, what the hardware does is similar in all systems. Size is the most basic difference among computer systems. Four computer systems are listed below.

A. **Supercomputers**--large computers with fast processing speeds that can access billions of characters of data.

1. The CRAY is one of the best known examples of supercomputers. The CRAY sells for about $20 million. The services of two full-time engineers are included in the purchase price. Another example of a supercomputer is the CYBER.

2. Both are used in such applications as nuclear physics, meteorology, and petroleum engineering.

3. Installation requires a specially prepared subflooring to support the weight of the computer and special plumbing to carry the fluorocarbon fluid needed as coolant.

4. About 150 supercomputers have been installed through 1987.

B. **Mainframe**--Computers built to minimize the distance between points for very fast operations. Used for extremely complicated computations.

1. Cost over $400,000 and can exceed $1,000,000.

2. Serve more than one user, because they support large networks of individual terminals and remote, job-entry locations.

3. Used by banks, large commercial and industrial companies, and government agencies. Most professional programmers work in a mainframe environment.

C. **Minicomputer**--moderate-sized computer. Used when a desktop computer is not powerful enough to do the job.

1. Can be relocated conveniently, because they have no special power or environmental control requirements.

2. Smaller, slower, and less expensive than mainframes, but perform the same tasks as mainframes (only on a reduced scale).

3. Cost between $10,000 and $40,000.

4. Store and retrieve data from the same type of input and output devices as mainframes do, but with a smaller storage capacity.

D. **Microcomputers**--the smallest desktop computers; they are largely owned by individuals. The name derives from its main computing component being located on one integrated circuit or chip.

   1. The slowest computer, but the least expensive.

   2. Limited in the volume of data it can process.

   3. Fit on a desk or table.

   4. Do not require a data processing expert to operate it.

   5. Support peripheral devices.

E. **Laptop**--a small portable computer weighing nine pounds or less.

V. The history and development of data processing actually has early roots. Men and women tried to develop tools to aid in calculating answers to problems and keeping track of the results. However, it was not until after the 18th century, a period known as the Industrial Revolution, that great strides were made. There were many events, discoveries, and inventions that culminated in our present computer age.

A. The following devices were employed or developed between ancient times and 1800.

   1. **Fingers**--Digits (fingers and toes) were considered to be the first calculating device. Early Roman schools taught finger counting.

   2. **Abacus**--This was the first counting machine, and it was used over 3,000 years ago by the Chinese. It was made up of rods and beads.

   3. **Napier's bones**--John Napier invented a device consisting of rods or bones to perform calculations in 1614.

   4. **Pascaline**--In 1642, Blaise Pascal, a Frenchman, invented the first mechanical adding machine which could add and subtract. The machine used gears and wheels.

   5. **Leibnitz wheel**--In 1671, Gottfried von Leibnitz, a German, developed a calculator that could add, subtract, multiply, divide, and do square root. The device did not work very well because of inadequate technology at that time.

B. The following people and/or devices contributed to data processing between 1800 and 1900.

   1. **Jacquard's loom**--In 1804, Joseph Jacquard, a Frenchman, developed the loom which could automatically weave patterns on cloth. The automatic looms were operated by paper cards with holes punched in them.

2. **Analytical Engine**--In 1833, Charles Babbage, an Englishman, designed a machine which included a memory, calculator, and a control part which moved numbers back and forth between memory and calculator. The machine was designed to use punched cards as input and output. The machine was never built, because the technology was not advanced enough to build the parts.

3. **Ada Augusta Lovelace**--Countess Lovelace, daughter of Lord Byron, collaborated with Charles Babbage on the analytical engine. She is referred to as the first programmer because of her concept of the loop, a set of instructions repeated frequently.

4. **Dr. Herman Hollerith**--In the 1880s, Dr. Hollerith developed a punched card mechanical processing machine. It was used by the Bureau of the Census for the 1890 census, which took only two and a half years. He organized a company to manufacture and market his machines; this company later became known as the International Business Machines Corporation (IBM).

C. The following people and devices contributed to the evolution of the computer from 1900 to the present.

1. **T. J. Watson, Sr.**--In 1924, T. J. Watson bought Hollerith's company and changed the name to IBM to convey the broadness of the scope he wanted for his company. He expected absolute loyalty and lifetime commitment from his employees and ran the company like a football coach/cheerleader. IBM financed the Mark I in 1944.

2. **Mark I**--This device was developed by Howard Aiken in 1944. This mechanical device was the first machine to use a stored program concept. It used punched cards as input and output. It was controlled automatically by instructions punched into paper tape attached to it. It was not an electronic machine.

3. **Grace Murray Hopper**--This navy commander began her career working with computers while a programmer on the Mark I in 1944. She coined the terms *bug* and *debug*. Grace Hopper also is known as the "mother of COBOL" because of her contributions to the writing of the programming language.

4. **ENIAC**--In 1946, the first electronic calculator was developed by Dr. John W. Mauchly and J. Presper Eckert under a contract from the U.S. Army. This machine contained thousands and thousands of vacuum tubes.

5. **EDSAC and EDVAC**--These electronic computers were developed to perform mathematical operations by stored program and without human intervention. These computers marked the beginning of what is called "The Computer Age."

6. **UNIVAC I**--This computer was manufactured by Sperry Rand in 1951, and it was the first commercial computer. General Electric and Metropolitan Life Insurance were the first companies to use the UNIVAC I for business purposes. The cost was $1.5 million, and it contained 500 vacuum tubes.

7. **Charles Tandy**--In 1963, this entrepreneur bought Radio Shack, a supplier of hobby supplies. Tandy turned its focus to electronics. He marketed a low-cost personal computer for electronic hobbyists and then modified the Model II for business applications. He also pioneered the personal computer sales with the TRS-80 by using retail outlets, a new marketing technique at that time. His company continues to influence the computer market with its headquarters in Ft. Worth, Texas.

8. **H. Ross Perot**--This entrepreneur created the largest computer service firm in the world, Electronic Data Systems (EDS). He began his career at IBM as a computer salesman in Dallas. Perot sold EDS to General Motors in 1984. He continues to be active in other computer ventures, as well as educational, philanthropic, and political activities.

9. **Jack Kilby**--This engineer invented the integrated circuit/silicon chip/microchip in 1958 while working at Texas Instruments in Dallas, Texas. He determined that all the parts of a circuit--resistors, capacitors, and transistors--could be made of silicon and manufactured in a single block. He shares the patent with Robert Noyce.

10. **John Kemeny/Thomas Kurtz**--These Dartmouth professors of mathematics wanted to make computers easier so that everyone could use them. They developed the first BASIC program in 1964 on a time-sharing system. Other educators quickly adapted this programming language for their classes at all educational levels on microcomputers.

11. **Nolan Bushnell**--In 1972, this entrepreneur began his company, Atari, which is a term used in the Japanese game "Go" that means, "I'm going to attack you." He was the first person to make a video game that fit into a box that could be put in an arcade. He developed Pong, a form of electronic table tennis.

12. **Stephen Wozniak and Steve Jobs**--These two men collaborated in producing the original Apple computer in 1976. They manufactured the first Apple in the garage of Job's parents; it had one circuit board with 62 chips--no keyboard, case, memory, or power supply. Neither is presently associated with the company. Jobs developed the NeXt company in 1988 for applications in a college environment.

13. **Jack Tramiel**--In 1977, Jack Tramiel showed his first computer, the Commodore PET, at an electronics show in Chicago. He followed the PET with the VIC-20 and the Commodore 64. His computers were cheap. His comment was, "We sell to the masses, not the classes."

14. **Daniel Bricklin**--This entrepreneur developed the first electronic spreadsheet VisiCalc while in college taking business classes. It was written for the Apple II in BASIC. In 1979 *VisiCalc* was offered commercially for $100 retail.

15. **Adam Osborne**--In 1981, Adam Osborne introduced his Osborne computer. His computer was designed to fit under an airplane seat. He bundled the computer with software, for example WordStar and *SuperCalc*.

16. **Mitch Kapor**--In 1983, his software program--*Lotus1-2-3*--put the words *integrated package* on everybody's lips. This software was developed for the new IBM PC with a 16-bit processor. He chose the name Lotus, which is considered by the Hindus as a symbol of perfect enlightenment.

D. **Computer generations**--the development of computers is divided into five generations according to dates. These generations are listed below by dates with a short description of the developments of each period.

1. **First**--from about 1952 to 1958, generation-one computers were characterized by their use of vacuum tubes. These computers were very slow, expensive to run and build, and unreliable. Heat and maintenance were also major problems. Applications were usually payroll processing and recordkeeping. The IBM 650 and UNIVAC I are examples of first-generation computers.

2. **Second**--from about 1959 to 1964, second-generation computers used transistors, which were smaller and required less power than vacuum tubes. Computers could now be programmed with English-like commands instead of numbers. Applications were batch-oriented, such as billing, payroll processing, and updating inventory files. The IBM 1401, Honeywell 200, and the CDC 1604 were second-generation computers.

3. **Third**--from 1965 to 1970 came the introduction of the integrated circuit. Instead of large boards, circuits were developed on single chips of silicon. Third-generation computers were about 900 times faster than first-generation computers. IBM introduced its 360 series mainframe computer and the smaller, minicomputer.

4. **Fourth**--Microprocessors derived from integrated circuits put microcomputers on the office desk. Fourth-generation computers are roughly 100 times smaller than first-generation computers. These processors were introduced in 1971.

5. **Fifth**--Many computer magazines and books state that we are now entering the fifth generation of computing. Fifth-generation computing is based on the advent of artificial intelligence operating systems. These operating systems use terminology very close to normal English syntax. Artificial intelligence systems are programmed with enormous banks of data based on expert opinion. When the user gives a command, the program will evaluate the command, and if more input is necessary from the user, it will ask for it.

VI. Types of microcomputer operating systems

A. MS-DOS was developed by Bill Gates at Microsoft Corporation and is the primary operating system for IBM microcomputers.

1. Versions of MS-DOS

a. MS-DOS 1.0 was developed in August 1981 for the IBM PC. It has features which include using single-sided disks with eight sectors per track. They could access up to 640K, and at that time, 64K was considered a huge amount of storage space.

b. New features of MS-DOS Version 1.1 include: uses double-sided disk with 40 tracks per side, or a total of 80 tracks; 320K of storage; and an access to 640K of RAM.

c. MS-DOS Version 2.0 was developed in 1982. With the introduction of the hard disk, the file organization was restructured using a system of subdirectories. The primary feature is that it provides support for the hard disk for the IBM XT.

d. MS-DOS Version 2.1 was released in 1983 with the introduction of the IBM PCjr, and it provides an additional feature of half-height disk drive support.

e. MS-DOS 3.0 was released in 1984 with the introduction of the IBM PC AT. It uses high-quad-density diskettes with 15 sectors per track and 80 tracks per side. In addition, it has 1.2MB of storage, access to 640K of RAM, and networking capabilities.

f. MS-DOS 3.2 was released in 1985 and features enhanced capabilities and is debugged.

g. MS-DOS 3.3 was released in 1987. It introduced the PS/2 family. It supports 3.5-inch disk and provides 720K, or 1.44MB, of storage.

h. MS-DOS 4.01 has a 512 MEG C drive and a DOS shell to facilitate use of DOS commands. Accommodates a hard drive bigger than 30 MEG. This is the latest DOS at this time.

2. MS-DOS disk configuration

   a. Sector usage

      (1) Boot area sector 0 is also called the "boot record." It consists of a short machine-language program that starts the process of loading DOS into memory.

      (2) The FAT area (File Allocation Table) is located in sectors 1-4 and keeps a record of where files are stored and how space is organized on the disk.

      (3) The root directory area occupies sectors 5-11. This area contains information on how files are organized in the root directory. It has a fixed size of 112 entries. When hard disks were developed, subdirectories were developed to overcome the limitation of root directories.

      (4) The data area uses sectors 12-719. This area is the place where data in files are stored.

   b. The DOS 3.2 disk specifications

      (1) Is double-sided, double-density, soft-sectored.

      (2) Has 9 disk sectors per track.

      (3) Has 40 tracks per side, or a total of 80 tracks.

      (4) Has 719 sectors.

      (5) Has 354 clusters for data files.

      (6) One cluster = 1024 bytes = 2 sectors. The space for files is allocated in clusters. The smallest amount of space the computer writes at one time is one cluster. One sector = 512 bytes, 1 cylinder = the same number of tracks on both sides of disk.

3. MS-DOS system files

   a. IBMBIO.COM is a read-only, hidden-system archive file with 9,564 bytes and 10 clusters; starts at sector 12, cluster 2.

   b. IBMDOS.COM is a read-only, hidden-system archive file with 27,760 bytes and 28 clusters; starts at sector 32, cluster 12.

   c. COMMAND.COM is an archive file, the only system file that is displayed when you list the files on the disk. It has 23,210 bytes and 23 clusters; starts at sector 88, cluster 40.

- **MS-DOS SYSTEM FILE NOTES:** When you attempt to put the operating system on a disk using the SYS command when there is information already there, you will often get the message that there is not enough room on the disk to transfer the system. That is because MS-DOS tries to put the system in one place on the disk, and quite often that area is already used. There are some utility programs that will move the data files to another place on the disk, thus allowing the storage of the operating system files.

B. The OS/2 operating system was designed by Microsoft in cooperation with IBM for its new family of PS/2 computers. It is considered the state-of-the-art operating system for managing information on the personal computer.

1. It allows computers to run several programs at the same time.

2. It allows computers to handle bigger programs and access more stored memory than can be handled by its predecessor, MS-DOS.

3. The OS/2 operating system will supersede MS-DOS as the operating system of choice by the end of 1990, with an estimated 3.7 million copies shipped that year versus 1.5 million copies of MS-DOS.

4. The OS/2 standard version will be compatible with 80286- and 80386-based computers. By utilizing the advanced capabilities of the 80286 and 80386 microprocessors, OS/2 provides the platform for advanced software applications offering a whole new class of productivity to users through its multitasking and larger memory addressing capability.

5. Versions of OS/2

   a. The OS/2 Standard Edition 1.0 was released in December 1987. It supports enhanced memory space, multitasking, and the existing MS-DOS environment; can access up to 16MB of RAM directly; and can run many MS-DOS programs in the 8088 mode.

   b. The OS/2 Standard Edition 1.1 adds IBM's Presentation Manager, a graphics-based program interfaced with windowing capabilities.

   c. The OS/2 Extended Edition offers a relational database system, terminal emulation, and connectivity. It consists of application development facilities, remote/local-area network data services, Systems Network Architecture (SNA/LAN), gateway support, and IBM's Enhanced Connectivity facility.

C. Apple operating systems

1. APPLE IIe DOS 3.3

a. When you format an Apple DOS 3.3 disk, you generally create a bootable disk, which means that the Apple DOS is installed on the disk. To format an Apple disk, you key in the command **INIT**, followed by a name, usually *HELLO*. This is the name of the program that will be run when the computer is booted. When you format an Apple DOS 3.3 disk, the following things happen:

(1) All previous information is erased from the disk.

(2) The 35 tracks are set up on one side of the disk. The Apple uses the backside of the disk. The other side of the disk may be used, but a write-enable notch may be created on the other side of the disk.

(3) Each track is divided into 16 sectors, and each sector contains 256 bytes for a total capacity of 163840 bytes.

(4) The Apple Disk Operating System 3.3 is stored on tracks 0,1, and 2.

(5) The index is created on track 17. The index track keeps track of the file type, file name, and the beginning location of the file.

b. The Apple DOS 3.3 writes one sector (256 bytes) at a time to the disk. As DOS writes files to disk, one sector at a time, the sectors may not be continuous. At the end of each sector, there is a pointer which points to the next sector for that file.

2. APPLE DOS 1.1 professional disk, ProDOS, is faster, easier to use, and more powerful than the DOS 3.3.

a. With the introduction of hard disks with a limitation of 105 files on the index track, there was a need for a new file organization to use the full capacities of the hard disk.

b. The new file organization created a tree structure with one root directory and many subdirectories. Each subdirectory may also have up to 64 levels of subdirectories.

c. To access these subdirectories, you create path names. This is also the reason MS-DOS upgraded to version 2.0. Versions prior to the introduction of the hard disk limited files to 116, the number of available entries in the directory.

d. The ProDOS operating system is generally stored on a startup disk. The computer is booted with this startup disk; then the disk is removed. (This is similar to MS-DOS system disks.) The system disk contains:

(1) Several utilities.

(2) A language processor.

(3) A user interface shell to guide users through the necessary file and disk handling utilities.

e. Unlike DOS 3.3, most disks for use under ProDOS do not have the operating system on them. The operating system requires too much disk space, as does the MS-DOS system disk. Therefore, a startup disk is used to load the operating system, then removed for normal use.

f. The general organization of the ProDOS disk contains 35 tracks, 8 blocks per track, 2 sectors per block, and 512 bytes. ProDOS writes one block at a time to disk and uses a single-sided disk.

3. MAC--the operating system is written exclusively by Macintosh. This operating system is meant to be completely invisible to the user. The system is user-friendly; just point and click.

a. Finder file version 4.1 will run on the Macintosh 512K and the Macintosh 512Ke.

b. System file version 3.0 and version 3.2 will run on the Macintosh 512K, the 512Ke, and the Plus.

c. System file version 4.0 and version 4.01 will run on the Macintosh 512K, the 512Ke, the Plus, the SE, and the II.

d. System file version 4.2 and 6.0 will run on the Macintosh Plus, the SE and the II.

e. System 7 has recently been announced and will soon be available.

VII. Productivity has significantly increased, because computers and computer-related tools have taken the place of most manual tasks. The following are examples of how computers and computer-related tools have helped increase productivity.

A. Word processing

1. Word processing packages, such as *WordPerfect* and *Microsoft Word*, have increased productivity.

a. Making corrections are easier than on a typewriter.

b. Typing speed increases, because office personnel know that corrections can be made easily.

c. Spell checkers and grammar checkers help with proofreading tasks.

2. Documents are easily stored on disks, which decreases the time spent on filing paper documents. (Some paper documents must still be filed.)

B. Networks

1. Networks have become popular, because software packages, data, or information can be shared among many workstations.

2. LANs (Local Area Networks)

a. LANs are used in offices.

b. Terminals should be located in close proximity, because all the terminals on the network are connected by cable.

3. Star networks

a. Terminals work from one main computer.

b. Terminals may communicate with each other.

4. Ring networks

a. Information moves clockwise.

b. If one terminal is down, all terminals are down.

5. Bus networks

a. Information moves sequentially.

b. All terminals can send and receive information.

6. Networks have increased productivity, since information can be easily retrieved.

C. Decision support systems (DSS)

1. A DSS aids in decision making.

2. Productivity is increased, since the DSS points out consequences and possible complications of each decision.

3. Databases, with current data, speed the data to the DSS, which aids in faster decisions.

D. Artificial Intelligence (AI)

   1. AI uses logic similar to human logic.

   2. Even though AI is not fully developed, it is currently being used in robotics and various other mechanisms.

E. Expert systems (ES)

   1. ES use AI to reason through problems.

   2. ES uses two databases.

      a. **Static database**--rules and data that can be used for problem solving; unchangeable.

      b. **Dynamic database**--compilation of facts that were used to reach a conclusion; changeable.

   3. ES is now being used with DSS to aid in structured and semi-structured problem solving.

F. **Office automation**--offices are becoming more "automated," which increases productivity.

   1. **E-mail**--memos can be sent by computer terminals and then received by other computer terminals.

   2. **Bulletin boards**--information can be placed in a mainframe's or minicomputer's memory. Anyone who has access to the information may read the information that has been posted.

   3. Facsimile (Fax)

      a. Faxing a document to another person across the country or across town saves time.

      b. Facsimile machines work on telephone lines.

      c. Faxes are becoming less expensive and more popular.

   4. Various other machines that aid office personnel also aid productivity.

G. Databases

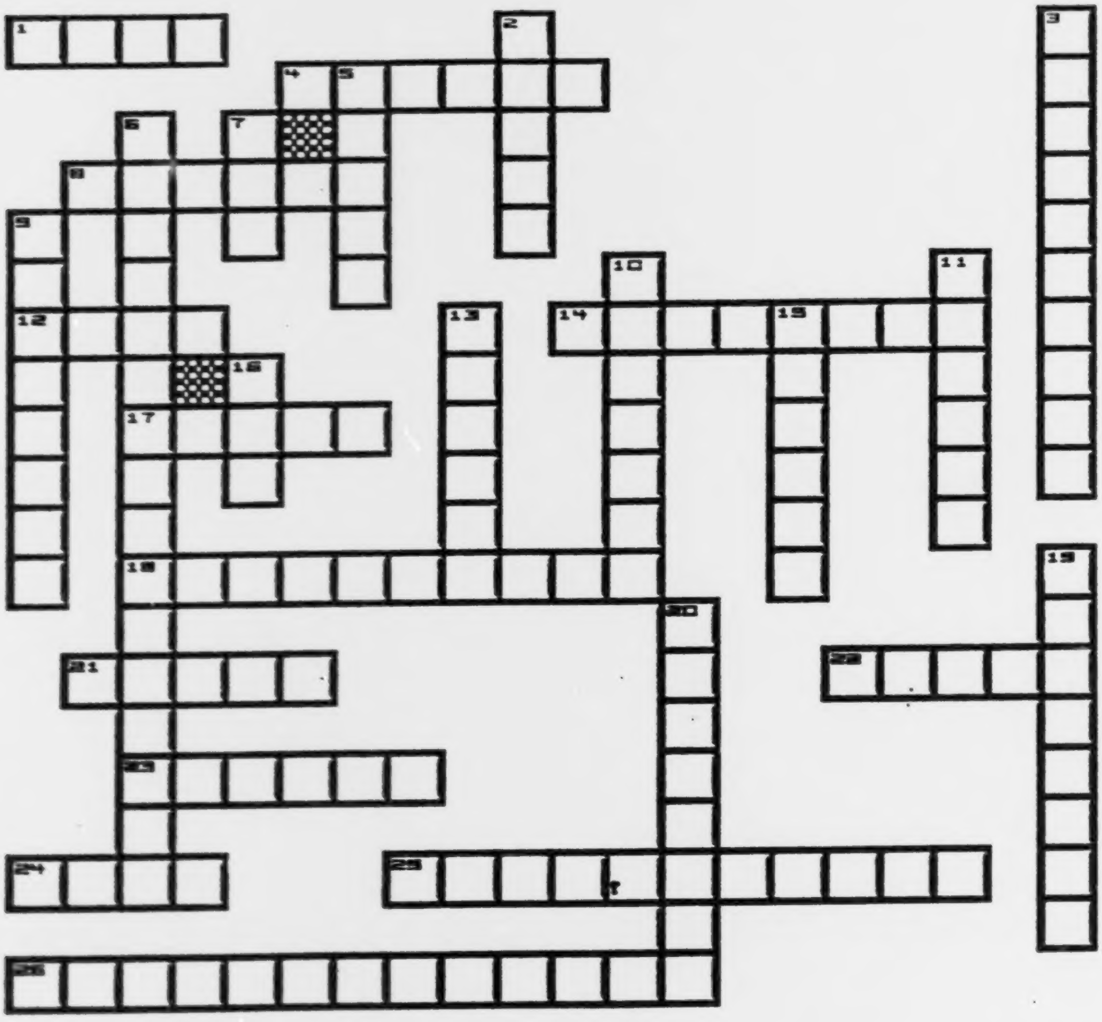
   1. A database must be designed so that data can be accessed quickly and with little or no redundancy.

   2. If a database is correctly designed, most office personnel will use the data regularly.

3. If the database is correctly designed, all the data can be integrated. This increases productivity, because those using the data can retrieve the information needed quickly and easily.

4. Databases should be both effective and efficient.

ACTIVITY 1: TERMINOLOGY CROSSWORD PUZZLE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ACTIVITY 1: TERMINOLOGY CROSSWORD PUZZLE CLUES

ACROSS CLUES

1. A list of options provided to the user by the computer program.
4. An eight-bit code that accommodates as many as 256 different characters. Primarily used on mainframe and minicomputers.
8. Communicating the results of the processing to the user.
12. A group of related records treated as a unit.
14. A measurement of the computer's memory.
17. The most commonly used coding scheme.
18. Data that are stored one file after the other.
21. A device used in data communications to connect computers through phone lines.
22. A device used in data communications.
23. Used mainly by scientists and engineers.
24. The person using the computer.
25. The type of processing where data are processed one record at a time.
26. The arrangement of data for storing.

DOWN CLUES

2. One piece of information, such as a name, address, or date.
3. The person who designs, writes, tests, and implements the programs which process data.
5. Processing data as a group.
6. A device on which data can be stored outside of the computer; another name for secondary storage.
7. Where all processing in the computer takes place.
9. Computer programs used to accomplish specific applications.
10. Computers which work by numbers and follow a set of instructions.
11. A group of related fields.
13. Records can be read in order regardless of how they were stored; also known as random-access.
15. Copies made of programs and data in case the original is damaged or destroyed.
16. Designed to encode numeric information in a manner that would be easier than straight binary to convert into decimal.
19. A program that interprets computer statements written in a symbolic form and converts the statements to machine language instructions.
20. The physical parts associated with the computer.

ACTIVITY 2: FUNCTIONS OF DATA PROCESSING

INSTRUCTIONS: Describe the functions of data processing listed below.

1. Summarizing

2. Calculating

3. Data collecting

4. Sorting

5. Communicating

6. Recording

7. Storing and retrieving

8. Classifying

ACTIVITY 3: PARTS OF THE INFORMATION PROCESSING CYCLE

Project 1

INSTRUCTIONS: **Draw and label a diagram showing the information processing cycle, and describe each step in the cycle.**

ACTIVITY 3 (Continued)

Project 2

INSTRUCTIONS: **Design an information processing cycle for the jobs listed below.**

1. Writing a research paper
2. Preparing a recipe
3. Averaging gas mileage on a trip
4. Calculating pay
5. Averaging grades
6. Hiring an employee

ACTIVITY 3 (Continued)

Project 3

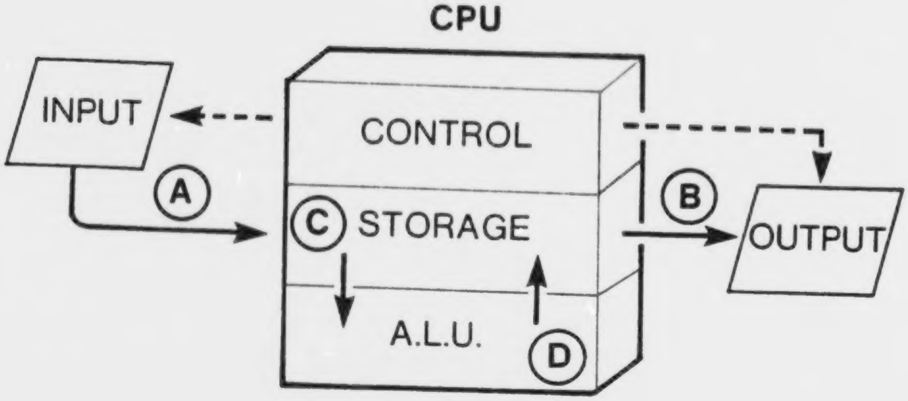
INSTRUCTIONS: **Draw and label a diagram showing the parts of a processor. Illustrate the flow of data through the processor.**

ACTIVITY 3 (Continued)

Project 4

INSTRUCTIONS: **Using the illustration below, indicate the direction of data flow for the six steps given by placing the letter representing the direction of the data flow in the space provided.**

______ 1. Input two numbers into the computer.
______ 2. Multiply the two numbers.
______ 3. Store the product of the multiplication.
______ 4. Divide the product by 4.
______ 5. Store the division result.
______ 6. Display the result on the monitor.



ACTIVITY 4: COMPUTER SYSTEMS CAPABILITIES AND LIMITATIONS

Project 1

INSTRUCTIONS: Explain the capabilities and limitations of the following computer systems.

1. Supercomputer:

2. Mainframe:

3. Minicomputer:

4. Microcomputer:

5. Laptop:

ACTIVITY 4 (Continued)

Project 2

INSTRUCTIONS: **Evaluate the capabilities and limitations of computer systems, and correlate them to the business situations listed below.**

BUSINESS SITUATIONS

______ 1. Fifteen thousand-student school district

______ 2. Word processing operator

______ 3. Accounting office with five employees

______ 4. Smallest computer

______ 5. Medical secretary

______ 6. Very small community hospital

______ 7. Major airline

______ 8. Portable

______ 9. Data processing center for a major factory

______ 10. Law firm with four lawyers

______ 11. Elementary school teacher

______ 12. Nuclear physics

COMPUTER SYSTEMS

A. Supercomputer

B. Mainframe

C. Minicomputer

D. Microcomputer

E. Laptop

ACTIVITY 4 (Continued)

Project 3

INSTRUCTIONS: **Interview six people who use computers on the job. Ask what type of system is used and why. Take notes on each interview. Prepare a short summary comparing why various computers are used in different jobs.**

Listed below are examples of questions which could be asked.

1. What type of computer system is used in this business?
2. What criteria were used in the decision to buy this system?
3. How many systems were compared before the purchase?
4. How much did the system cost?
5. What applications are used the most on the system?
6. How much time is the computer used daily?
7. How much training were the employees involved in when learning how to use the system?
8. How many different employees use the system?

Project 4

INSTRUCTIONS: **Look through a variety of computer and business magazines, and select pictures of computer systems. Prepare a poster that identifies each computer system by the five types studied. If possible, include prices and descriptions.**

ACTIVITY 5: HISTORY OF DATA PROCESSING

Project 1

INSTRUCTIONS: **Match the dates shown below to the inventions that correspond to them.**

	YEAR		INVENTION
A.	1614	1.____	Babbage's analytic engine
B.	1890	2.____	Microprocessor
C.	1946	3.____	Jacquard's loom
D.	1804	4.____	UNIVAC I
E.	Late 1940s	5.____	Leibnitz wheel
F.	1833	6.____	Napier's bones
G.	1971	7.____	IBM 360
H.	1642	8.____	EDSAC and EDVAC
I.	1944	9.____	Hollerith's punched card
J.	1671	10.____	Mark I
K.	1951	11.____	ENIAC
L.	Late 1960s	12.____	Pascaline

ACTIVITY 5 (Continued)

Project 2

INSTRUCTIONS: **Draw a time line illustrating the development of calculating machines and computers in the history of data processing, starting with fingers and ending with microprocessors. Include at least one characteristic to describe each device shown on the time line.**

Project 3

INSTRUCTIONS: **Prepare a one-page written report about one of the inventions discussed in data processing history, and explain how it aided in the development of computers.**

Project 4

INSTRUCTIONS: **Select one of the people who made contributions to the computing industry, and write a one-half page report. Make an oral presentation to the class.**

ACTIVITY 6: MICROCOMPUTER OPERATING SYSTEMS

1. Chart the development of the Microsoft Disk Operating System (MS-DOS).

2. Read articles about Bill Gates, and write a paragraph about his accomplishments.

3. Experiment with and explain what the operating system does when:

    a. Access is attempted with an initialized disk.

    b. Access is attempted to a different brand of computer.

4. Practice the steps of initializing disks both with and without operating system components.

5. Using a DOS reference manual or guide, outline the functions of DOS for a personal computer.

ACTIVITY 7: PRODUCTIVITY AND COMPUTER-RELATED TOOLS

Project 1

INSTRUCTIONS: **Define each of the following, and then explain how each one has increased productivity.**

1. Word processing

2. Networks

3. Decision support systems

4. Artificial Intelligence

5. Expert systems

6. Office automation

7. Databases

ACTIVITY 7 (Continued)

Project 2

INSTRUCTIONS: **Write a short paragraph explaining how decision support systems, Artificial Intelligence, and expert systems are related and how they can be used.**

SECTION II

WORD PROCESSING

ESSENTIAL ELEMENTS

75.87 (e)(2), (5)(B)(C)

2. Concepts and skills related to word processing. The student shall be provided opportunities to:

   A. Demonstrate word processing concepts;

   B. Apply higher-level capabilities of word processing tools and software; and

   C. Understand the procedures and recognize the importance of merging data processing and word processing.

5. Concepts and skills related to advanced application software. The student shall be provided opportunities to:

   B. Demonstrate the ability to apply information processing concepts and skills to realistic business situations; and

   C. Demonstrate the ability to apply information processing concepts and skills to personal situations.

SUGGESTED LESSON PLAN

SECTION II: WORD PROCESSING

UNIT I: CONCEPTS OF WORD PROCESSING

ESSENTIAL ELEMENTS:	**75.87 (e)(2)(A), (5)(B)(C)**	**ALLOCATED TIME: 10 Hours**

UNIT OBJECTIVE: Students will demonstrate basic word processing concepts.

STUDENT COMPETENCIES: Upon completion of this unit, the student will be able to:

1. Explain and demonstrate basic word processing terminology.
2. Explain the purpose of computerized word processing and identify applications for its use in business, industry, government, education, and personal uses.
3. Identify and explain the function of each equipment component within the word processing system.
4. Identify two types of storage devices within the word processing system.
5. Demonstrate the use of each equipment component within the word processing system.

FOCUS: The applications for word processing are almost endless. The ease with which one can draft and revise memos, letters, reports, and other documents with word processing increases both the speed and quality of one's writing.

DOMAINS: Activities and competency tests have been designed to provide learning experiences utilizing the cognitive, psychomotor, or affective domains. Activities and competency tests are coded on the Activity and Competency Test Matrices.

BASIC SKILLS: Activities and competency tests have been designed to reinforce the basic skills of reading, writing, and/or mathematics. Activities and competency tests have been coded on the Activity and Competency Test Matrices.

CONTENT OUTLINE

- I. Defining word processing
- II. Historical development
    - A. Use of symbols
    - B. The Chinese
    - C. Johann Gutenberg
    - D. First typewriter
    - E. Automatic typewriter
    - F. Dedicated word processing
    - G. Microcomputer
- III. Information processing applications
    - A. Memos, letters, and reports
    - B. Form documents
    - C. Electronic mail
    - D. Text
    - E. Mathematics and algebraic equations
- IV. Integrated word processing
- V. Components of word processing equipment
    - A. Computers
    - / B. Input devices
    - / C. Output devices
    - D. Auxiliary storage
- VI. Storage components
    - A. Floppy disk
    - B. Hard disk

VII. Basic features of word processing
  A. Modifications
  B. Screen
  C. Keys
  D. Word wrap

VIII. Steps involved in the word processing cycle
  A. Loading the software program
  B. Opening a new document file
  C. Creating a document
  D. Editing a document
  E. Formatting a document
  F. Managing files, including saving and retrieving documents
  G. Printing documents
  H. Clearing the screen or quitting the program

SUGGESTED TEACHER ACTIVITIES

General Teacher Preparation

1. Preview the unit.
2. Review unit objectives.
3. Make instructional analysis.
4. Assess student learning needs.
5. Decide on lesson domain: cognitive, psychomotor, or affective domain.
6. Select instructional materials based on instructional analysis and student learning needs.
7. Select instructional strategies based on lesson content and student learning needs.
8. Prepare lesson plans from the unit lesson.
9. Prepare additional instructional material.
10. Reserve necessary media and equipment.

Teacher Presentation

1. Present student objectives.
2. Establish rapport with students.
3. Review lesson objectives with students.
4. Relate lesson to prior or future learning.
5. When appropriate, encourage student interaction through questioning, discussions, or some other strategy.
6. Emphasize the value/importance of the unit or activity.
7. Allow time for closure of a lesson.

Reteach Activities

1. Identify area(s) of weakness from results of evaluation.
2. Select unit activities not previously used.
3. Use additional resources and/or create materials based on student learning needs.
4. Use a different teaching strategy in reteaching.
5. Retest.

Specific Teaching Activities

1. Produce transparencies illustrating the features of the software to be used.

2. Set up a visit to a school office or local business where students can observe the "life" of a document, from input to storage and retrieval.

3. Discuss the function keys that are specific to your word processing software program.

4. Use a flow chart to illustrate the path of a document as it proceeds through the processing cycle.

Activity 1

Project 2 **Materials Needed:** 1 sheet of typing paper per student
Pencils
Computer terms

Give each student one sheet of paper.

Have students draw five vertical lines down the 11" side of the paper.

Have students draw four vertical lines down the 8 1/2" side of the paper. 20 squares should result.

Designate the second square on the third row as a free space.

Write a list of terms on the board. Have students select terms at random and place one term in each square on their paper.

HOW TO PLAY

Reads definition for one of the terms.

The students who have the term being defined on their card mark an X on that space on their card.

The student who finds all terms on his/her card wins first.

NOTE: This game can be used with any section or combination of sections in this unit to aid in teaching and reviewing new material.

Activity 2

Project 2 Make arrangements for students to visit and observe businesses that are using information processing.

Activity 5

Project 1	Provide students with documentation for the software program so they can look up the specific commands.
Projects 2-3	Examine exercises to see if any additional modifications need to be made.

Competency Test

Project 4	Examine to see if any modifications need to be made.

ACTIVITY MATRIX

Activities	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
1 Project 1	X			X		
Project 2	X	X			X	
2 Project 1	X				X	
Project 2	X				X	
3 Project 1	X				X	
Project 2	X			X	X	
4	X			X	X	
5 Project 1	X				X	
Project 2	X	X		X	X	
Project 3	X	X		X	X	

COMPETENCY TEST MATRIX

Parts	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
I	X				X	
II-IV	X				X	
V	X	X		X	X	

COMPETENCY TEST

PART I: TERMINOLOGY

Project 1

INSTRUCTIONS: Define the following information processing terms.

1. Backup
2. Character
3. Command
4. Directory
5. Disk
6. File
7. Format
8. Hardcopy
9. Keyboarding
10. Load
11. Proofreading
12. Save
13. Scrolling
14. Toggle switch
15. Word wrap

PART I (Continued)

Project 2

INSTRUCTIONS: Fill in the blanks with the appropriate word or words.

1. ______________________ is a single digit, character or space.
2. ______________________ is a list of the file names located on the disk.
3. ______________________ is a unit of storage for information (text, data, or programs) on the disk identified by a unique name.
4. ______________________ is typing; entering information by operating a keyboard.
5. ______________________ is transferring the program or file into computer memory.
6. ______________________ is reading copy to find and mark errors for correction.
7. ______________________ is a duplicate file.
8. ______________________ is an instruction given to the computer when you press a specific key.
9. ______________________ is a command key that turns a feature on and off, for example, the caps lock key can be used to switch between upper and lower case letters.
10. ______________________ is a command to write the document or program onto the disk.
11. ______________________ is a feature that sends text to the beginning of the next line when you type beyond the margin.
12. ______________________ is a magnetic medium for recording (storing) information.

PARTS II-IV: PURPOSE OF WORD PROCESSING AND APPLICATIONS, FUNCTIONS OF EQUIPMENT COMPONENTS, AND TYPES OF STORAGE DEVICES

INSTRUCTIONS: Answer the following questions.

1. Explain the purpose of computerized information processing and identify three applications.

   Purpose

   Applications

   1.

   2.

   3.

2. List and explain the function of each equipment component within the information processing system.

3. Name two types of storage devices for information processing and describe their characteristics.

PART V: DEMONSTRATING USE OF EQUIPMENT

INSTRUCTIONS: **Complete the following project and print a copy to hand in with this assignment.**

STEP 1: Load the operating system diskette into the RAM of the computer.

STEP 2: Load the information processing (word processing) program.

STEP 3: Place your formatted data disk in drive B.

STEP 4: Type the following:

> **A worker's responsibility involves more than just performing a job. Employers expect workers to work with a positive attitude toward the job and other employees.**

STEP 5: Proofread your copy.

STEP 6: Save the information onto your formatted data disk in drive B. You can select the file name.

STEP 7: Print a copy.

STEP 8: Exit the word processing system.

STEP 9: Retrieve your file and edit it. Add the following line:

> **They expect you to do a full day's work for a full day's pay.**

STEP 10: Resave your document.

STEP 11: Print a copy.

STEP 12: Exit the word processing system.

ANSWERS TO ACTIVITIES

Activity 1

Project 1

1. Pitch
2. Proportional
3. Spacing
4. Justify
5. Margins
6. Header
7. Footer
8. Center
9. Tab
10. Indent
11. Hanging
12. Indentation
13. Formatting
14. Ruler
15. Editing
16. Typeover
17. Inserted
18. Move
19. Line
20. Cut
21. And
22. Paste
23. Highlight
24. Hyphenating
25. Widows
26. Orphans
27. Page
28. Breaks

Project 2 Evaluated to the satisfaction of the instructor.

Activity 2

Project 1

Purpose--computerized information processing documents are created, revised, stored, retrieved, and printed.
Business/industry--memos, letters, reports, and sales letters
Government--contracts, letters, reports, and memos
Education--lesson plans, research papers, compositions, and reports

Project 2 Evaluated to the satisfaction of the instructor.

Activity 3

Project 1

1. Computer--the CPU.
2. Input device--device for entering data.
3. Output device--device to display document.
4. Auxiliary storage--disk used to store the document for later use.

Project 2 Evaluated to the satisfaction of the instructor.

Activity 4 Evaluated to the satisfaction of the instructor.

Activity 5

Projects 1-3 Evaluated to the satisfaction of the instructor.

COMPETENCY TEST ANSWERS

Part I

Project 1

1. A duplicate file.
2. A single digit, letter, special, character, or space.
3. An instruction given to the computer when you press a specific key or a key in a specific word(s)
4. A list of the file names located on the disk.
5. Magnetic medium for recording (storing) information.
6. A unit of storage for information (text, data, or programs) on the disk, identified by a unique name.
7. The way information is arranged on the screen or the page, using margin, centering, and other printing features.
8. Written, typed, or printed copy; a document.
9. Entering characters into the memory of a word processor.
10. Transfering a program or file into the computer's memory.
11. Reading copy to find and mark errors for corrections.
12. Command used to write the document or program onto the disk.
13. Moving a portion of the text on the screen into view.
14. A command key that turns a feature on or off. For example, the caps lock key can be used to switch between upper and lower case letters.
15. A feature that sends text to the beginning of the next line when you type beyond the margin.

Project 2

1. Character
2. Directory
3. File
4. Keyboarding
5. Load
6. Proofreading
7. Backup
8. Command
9. Toggle switch
10. Save
11. Word wrap
12. Disk

Parts II-IV

1. The purpose of computerized information processing documents are to create, revise, store, retrieve, and print.
Business/industry--memos, letters, reports, and sales letters.

Government--contracts, letters, reports, and memos.
Education--lesson plans, research papers, compositions, and reports.

2. Computer--the CPU and memory.
Input device--device for entering data.
Output device--device to display document.
Auxilliary storage--disk used to store the document for later uses.

3. Floppy disk and hard disk.

Part V Document to be evaluated to the satisfaction of the instructor.

COMPETENCY CHECKLIST

ESSENTIAL ELEMENTS: 75.87(e)(2)(A), (5)(B)(C)

Students will be provided opportunities to demonstrate word processing concepts; and demonstrate the ability to apply word processing concepts and skill to personal situations.

OBJECTIVE:	**Students will demonstrate basic word processing concepts.**	**MASTERY**	**NON-MASTERY**
1.	**Explain and demonstrate basic word processing terminology.**	______	______
2.	**Explain the purpose of computerized word processing, and identify applications for its use in business, industry, government, and education, and personal uses.**	______	______
3.	**Identify and explain the function of each equipment component within the word processing system.**	______	______
4.	**Identify two types of storage devices within the word processing system.**	______	______
5.	**Demonstrate the use of each equipment component within the word processing system.**	______	______
		______	______
		______	______

STUDENT NAME ______________________________

SUGGESTED LESSON PLAN

SECTION II: WORD PROCESSING

UNIT II: WORD PROCESSING APPLICATIONS

ESSENTIAL ELEMENT: 75.87 (e)(2)(B)(C)

ALLOCATED TIME: 20 Hours

UNIT OBJECTIVE: Students shall be able to apply the capabilities and features of word processing to produce a document.

STUDENT COMPETENCIES: Upon completion of this unit, the student will be able to:

1. Outline and explain the steps in the document production cycle.
2. Use the steps in the document production cycle to produce a document.
3. Explain and demonstrate the formatting features of a word processing software package.
4. Explain and demonstrate the editing features of a word processing software package.
5. Explain and demonstrate the searching/locating features of a word processing software package.
6. Demonstrate the use of the word processing software to produce a report, memo, and letter.

FOCUS: In the word processing system, one needs to understand the difference between writing on a word processor and using a typewriter. When one is familiar with, and has had some practice with the features and commands of the software, he/she is in a position to use the program for document production.

DOMAINS:	Activities and competency tests have been designed to provide learning experiences utilizing the cognitive, psychomotor, or affective domains. Activities and competency tests are coded on the Activity and Competency Test Matrices.
BASIC SKILLS:	Activities and competency tests have been designed to reinforce the basic skills of reading, writing, and/or mathematics. Activities and competency tests have been coded on the Activity and Competency Test Matrices.

CONTENT OUTLINE

I. Five steps of the document cycle
  A. Origination
  B. Processing
  C. Editing the text (proofreading/correcting errors)
  D. Saving the document
  E. Distribution or communication of the information

II. Word processing software functions
  A. Help
  B. Formatting
    1. Margins
    2. Tab stops
    3. Indenting paragraphs
    4. Character formats
  C. Entering and editing
    1. Inserting and replacing (typeover)
    2. Deleting
    3. Reformatting
    4. Line spacing
    5. Block operations
    6. Moving or cut/paste
    7. Coping
    8. Searching and replacing
  D. Printing
    1. Top and bottom margins

  2. Right justification
  3. Headers and footers
  4. Pagination
  5. Pitch
  6. Page breaks
  7. Merge-printing

E. Advanced features

  1. Split screen
  2. Column mode
  3. Spell checker
  4. Thesaurus
  5. Outlines
  6. Macros
  7. Windows
  8. Style checkers
  9. Math/calculator
  10. Automatic file backup
  11. Automatic saving

SUGGESTED TEACHER ACTIVITIES

General Teacher Preparation

1. Preview the unit.
2. Review unit objectives.
3. Make instructional analysis.
4. Assess student learning needs.
5. Decide on lesson domain: cognitive, psychomotor, or affective domain.
6. Select instructional materials based on instructional analysis and student learning needs.
7. Select instructional strategies based on lesson content and student learning needs.
8. Prepare lesson plans from the unit lesson.
9. Prepare additional instructional material.
10. Reserve necessary media and equipment.

Teacher Presentation

1. Present student objectives.
2. Establish rapport with students.
3. Review lesson objectives with students.
4. Relate lesson to prior or future learning.
5. When appropriate, encourage student interaction through questioning, discussions, or some other strategy.
6. Emphasize the value/importance of the unit or activity.
7. Allow time for closure of a lesson.

Reteach Activities

1. Identify area(s) of weakness from results of evaluation.
2. Select unit activities not previously used.
3. Use additional resources and/or create materials based on student learning needs.
4. Use a different teaching strategy in reteaching.
5. Retest.

Specific Teaching Activities

1. In all projects which require the student to key a document, the student should be able to independently load the system and software being used in the class. The document should be error-free and in correct form. The student should be able to proofread, correct, save, and print a hardcopy.
2. Develop a wallchart or handouts of the commands and options for the software.
3. Assemble samples of different categories of documents that might have been produced by a word processor. These can be displayed in the classroom.
4. Duplicate worksheets on types of documents and word processing features.
5. Prepare transparencies to use with lecture and discussion, outlining the procedures that will be used.
6. For each activity, go over the appropriate instructions specific to your computer and word processing software requirements.
7. Make available a hands-on tutorial for individual instruction in the use of the software.
8. Arrange a competition among individuals or teams to produce assigned documents correctly, in the shortest time.
9. Activity 3, Project 1-3, cover competencies 3-6.
10. Part I of the Competency test covers competencies 1 an 2. Part II, Projects 1 and 2 covers competencies 3-6.

Activities 2-5

Project 2 Documents and instruction sheets need to be provided for students to practice inputting and performing formatting changes.

Activity 6

Project 3 May need to assist students in composing a letter. Give your OK on the handwritten letter before it is keyed in.

Activity 7

Project 1 Furnish documents to be keyed in and provide instructions for preparation.

ACTIVITY MATRIX

Activities	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
1	X				X	
2 Project 1	X	X		X	X	
Project 2	X	X		X	X	
Project 3	X	X		X	X	
3 Project 1	X				X	
Project 2	X	X		X	X	
Project 3	X	X		X	X	
Project 4	X	X		X	X	
4 Project 1	X	X		X	X	
Project 2	X	X		X	X	
Project 3	X			X	X	

COMPETENCY TEST MATRIX

Parts	**Domains**			**Basic Skills**		
	Cognitive	**Psycho-motor**	**Affective**	**Reading**	**Writing**	**Math**
I	X	X		X	X	
II Project 1	X			X		
Project 2	X				X	
III Project 1	X	X		X	X	
Project 2	X	X		X	X	
Project 3	X	X		X	X	

COMPETENCY TEST

PART I: THE DOCUMENT CYCLE

STEP 1 Load the operating system into the RAM of the computer.

STEP 2 Load the word processing software and formatted disk in drive B.

STEP 3 Key in your answers to Part I by responding to the following questions.

1. Name and explain the five steps in the document cycle.

    1.

    2.

    3.

    4.

    5.

2. Explain the purpose of the editing feature, the formatting feature, and the searching/locating feature.

STEP 4 Reformat the outline, setting the margins to 1 1/2 inches on the left and 1 inch on the right.

STEP 5 Edit your responses, proofreading for all mistakes.

STEP 6 Save your responses onto the formatted data disk. Label the file with your last name followed by 1.

STEP 7 Exit the word processing system.

STEP 8 Give your disk to your instructor.

PART II: FORMATTING, SEARCHING/LOCATING, AND EDITING, FEATURES

Project 1

INSTRUCTIONS: Fill in the blanks with the appropriate word or words.

1. ______________________________, ______________________________, and ____________________ are three methods of originating a document.
2. ______________________________, ______________________________, and ____________________ are three ways of entering data into memory of the computer.
3. ____________________ and ____________________ are two types of storage devices.
4. ______________________________, ______________________________, and ____________________ are three ways documents can be distributed.
5. ____________________ permits communication over a short distance (example, within a building).
6. ____________________ transmits data of any type including signatures and pictures.
7. ____________________ feature allows a part of the document to be brought into view for editing.
8. ____________________ message systems are software packages which facilitate text communication among compatible terminals.
9. ____________________ systems are similar to CBMS except the input method is the human voice.

PART II (Continued)

Project 1 (Continued)

10. ____________________ is by far the most common method of distributing a document; however, ____________________ services provide fast delivery of letters and small packages.

Project 2

INSTRUCTIONS: Explain the purpose of the following features

Editing

Formatting

Searching/locating

PART III: PRODUCING A REPORT, A MEMO, AND A LETTER

Project 1

INSTRUCTIONS: **The annual staff has asked you to compose a list of all school activities and school clubs. The format is to make two columns, and to center both horizontally and vertically on the page. Provide the proper heading. Proofread, correct, save, and print a hardcopy.**

Project 2

INSTRUCTIONS: **Write a memo to each of the following salespersons informing them of their convention schedule for this month. Also, type, for the sales convention coordinator, a convention schedule in column form. Proofread, correct, save, and print a hardcopy.**

Marian Hill	2 - 6	Dallas Hilton
	14 - 16	Houston Hyatt
	20 - 26	San Antonio Marriott
Lloyd Davee	3 - 7	El Paso Hilton
	14 - 16	Dallas Fairmont
	21 - 27	Houston Adam's Mark
John Anderson	1 - 5	Fort Worth LaQuinta
	13 - 17	Amarillo Sheraton
	22 - 27	Austin Marriott

Project 3

INSTRUCTIONS: **You are the chairperson of the board and you need to write a letter to another board member, Mr. Lynn Hooper, advising him of the meeting at 9:30 a.m. next Thursday. Also, tell him you are considering opening another branch office in his city and this will be discussed at the meeting. Request that he conduct research for you. Proofread, correct, save, and print a hardcopy.**

ANSWERS TO ACTIVITIES

Activity 1

1. Origination is the process of converting raw facts and data into usable information.
2. Processing involves converting the information from dictated to hand-written form to finished document.
3. The text is edited (proofread/errors corrected).
4. Saving the document involves transferring the document from the temporary memory to permanent storage.
5. Distribution involves distribution or communication of the information by some means.

Activity 2

Project 1	Answers will vary according to the word processing software and equipment used. Evaluated to the satisfaction of the instructor.
Projects 2-3	Evaluated to the satisfaction of the instructor.

Activity 3

Projects 1-4	Evaluated to the satisfaction of the instructor.

Activity 4

Projects 1-3	Evaluated to the satisfaction of the instructor.

COMPETENCY TEST ANSWERS

Part I

1. Five steps of the document cycle are:
    a. Origination is the process of converting raw facts and data into usable information.
    b. Processing involves converting the information from dictated to hand-written form to finished document.
    c. The text is edited (proofread/errors corrected).
    d. Saving the document involves transferring the document from the temporary memory to permanent storage.

   e. Distribution involves distribution or communication of the information by some means.

2. a. Editing is the ability to create text easily and to change it.
   b. Formatting is the process of changing the left, right, top, and bottom page margins, or changing the line spacing for a part of the document or for an entire document.
   c. Searching/locating allows for selected changes to be made to all occurrences of a particular character, word, or phrase.

Part II

Project 1

1. Longhand, dictation, composition at the keyboard, and voice processing.
2. Three of the folllowing: keyboard, microfilm (CIM), optical character recognition (OCR), and voice-to-terminal.
3. Floppy disk and hard disk.
4. U.S. Postal Service, courier service, and electronic delivery system.
5. Local area networks (LANs).
6. Facsimile equipment.
7. Printing.
8. Computer-based.
9. Voice mail.
10. U.S. Postal Service; courier.

Project 3

Editing--is the ability to create text easily and to change it.
Formatting--is the process of changing the left, right, top, and bottom page margins or changing the line spacing for a part of the document or for an entire document.
Searching/locating--allows for selected changes to be made to all occurrences of a particular character, word or phrase.

Part III

Projects 1-3 Evaluated to the satisfaction of the instructor.

COMPETENCY CHECKLIST

ESSENTIAL ELEMENT: 75.87(e)(2)(B)(C)

The student will be provided opportunities to apply higher level capabilities of word processing tools and software; and understand the procedures and recognize the importance of merging data and word processing.

OBJECTIVE:	**Students will be able to apply the capabilities and features of word processing to produce a document.**	**MASTERY**	**NON-MASTERY**
1.	Outline and explain the steps in the document production cycle.	______	______
2.	Use the steps in the document production cycle to produce a document.	______	______
3.	Explain and demonstrate the formatting features of a word processing software package.	______	______
4.	Explain and demonstrate the editing features of a word processing software package.	______	______
5.	Explain and demonstrate the searching/locating features of a word processing software package	______	______
6.	Demonstrate the use of word processing software to produce a report, memo, and letter.	______	______
		______	______
		______	______

STUDENT NAME ____

SECTION II: WORD PROCESSING

UNIT I: CONCEPTS OF WORD PROCESSING

UNIT OBJECTIVE: Students will demonstrate basic word processing concepts.

STUDENT COMPETENCIES: Upon completion of this unit, the student will be able to:

1. Explain and demonstrate basic word processing terminology.
2. Explain the purpose of computerized word processing and identify applications for its use in business, industry, government, education, and personal uses.
3. Identify and explain the function of each equipment component within the word processing system.
4. Identify two types of storage devices within the word processing system.
5. Demonstrate the use of each equipment component within the word processing system.

FOCUS: The applications for word processing are almost endless. The ease with which one can draft and revise memos, letters, reports, and other documents with word processing increases both the speed and quality of one's writing.

TERMINOLOGY

Auxiliary storage	The secondary or external memory for storing information from the computer for later use.
Backup	A duplicate file.
Centering	Balancing text or heading between margins.
Central processing unit (CPU)	The brain of the computer.
Character	A single digit, letter, special character, or space.
Command	An instruction given to the computer when you press a specific key or begin a specific word(s).
Cursor control keys	Special keys located on the keyboard which allow the user to move the cursor and type anywhere in the text area on the screen.
Cut and paste	To remove a block from one part of a document or in another document.
Directory	A list of file names located on the disk.
Disk	Magnetic medium for recording (storing) information.
Editing	Correcting errors and making changes.
File	A unit of storage for information (text, data, or programs) on the disk, indentified by a unique name.
Floppy disk	A magnetic medium which resembles a phonograph record, consisting of a disk enclosed within a protective jacket inserted into a diskette drive.
Footer	A line of text repeated at the bottom of each page.
Format	The way information is arranged on the screen or the page, using margin centering, and other printing features.
Function keys	Special keys located on the keyboard which are used to execute common commands such as underlining and printing.
Hanging indent	The first line of text is not indented; however, every line after the first is indented.
Hardcopy	Written, typed, or printed copy; a document.

Hard disk	A rigid metal platter that allows data to be recorded on the head of the platter and is permanently fixed within the computer.
Header	A line of text which appears at the top of each page.
Highlight	To emphasize text on the screeby displaying it in inverse video, or in a color different from the display's regular color.
Hyphenating	Dividing words at the end of a line.
Indent	To move in from the margin such as in the first line of a paragraph.
Insert	Adding additional characters, words, spaces, or lines to existing text.
Input device	Equipment used to enter data into the computer such as the keyboard, a mouse, a joystick, and an optical character reader.
Justification	Feature used to make all text flush right and left.
Keyboarding	Entering characters into the memory of a word processor.
Load	Transferring a program or file into the computer memory.
Memory	The place within the computer where information is stored.
Orphan	The last line of a paragraph which is printed at the top of a page, after a page break.
Output device	Equipment that accepts the electrical signals from the CPU such as a printer or a CRT screen.
Page bread	Indicate a new page; may be done automatically or manually.
Pitch	Number of characters per inch the printer will use.
Proofreading	Reading copy to find and mark errors for correction.
Proportional spacing	Adjusts the space occupied by each character, according to size.
RAM (Random-access memory)	Memory within the computer which is changeable and reusable.
ROM (Read-only memory)	Memory within the computer which is permanent and cannot be changed.
Ruler	A guide displayed on the screen by some word processors, to assist in formating.

Save	Command used to write the document or program onto the disk.
Scrolling	Moving a portion of the text on the screen into view.
Storage components	Media such as floppy disks, hard disks, and magnetic tape that are used to store information.
Tab	A preset distance from the left margin to which the cursor can be moved with a single keystroke.
Toggle switch	A command key that turns a feature on or off. For example, the CAPS LOCK key can be used to switch between upper and lower case letters.
Typeover	A condition in which characters are replaced, rather than inserted, when typed into existing text.
Widow	The first line of a paragraph which is printed at the bottom of a page, before a page break.
Word wrap	A feature that sends text to the beginning of the next line when you type beyond the margin.

UNIT OVERVIEW

I. Word processing involves collecting/creating, recording, manipulating, storing, and printing data to produce useful information. The productivity of the office has increased as a result of computerized procedures and equipment used to create, sort, reproduce, and distribute information.

II. Historical developments

  A. Humans first used symbols to represent a thought or an idea. These were verbal, so another person had to be present to get the message.

  B. The Chinese began to use symbols carved out of blocks of wood to produce printed documents on paper in the fifth century.

  C. Johann Gutenberg developed the movable-type press in the early-to-mid 1400s.

  D. The first patent for a typewriter was granted in 1714 to Henry Mills; however, the first working model was not produced until 1867 by Christopher Sholes, an American printer. In 1875 the product was finally manufactured and marketed by Remington and Sons.

  E. The Hooven Company introduced an automatic typewriter in 1918 that recorded keystrokes on an embossed cylinder for later playback.

  F. Dedicated word processing systems were developed during the late 1960s and the early 1970s. They could be used only by a single person at a time and could perform only a single word processing function.

  G. In the late 1970s, the microcomputer made systems more flexible. They now support multiusers, integrated with other hardware, and perform a variety of functions.

III. Information processing applications are almost endless, ranging from tasks that can be done on a typewriter to entirely new tasks that are not possible without the power of the computer. In computerized information processing, documents are created, revised, stored, retrieved, and printed.

  A. Memos, letters, and reports can be entered, edited, revised, saved, and printed in a variety of formats.

  B. Form documents, such as contracts, sales letters, and collection notices, can be prepared and used many times.

  C. Electronic mail documents can be prepared for telecommunication via a modem over telephone lines.

  D. Text that will be published for projects, such as catalogs, advertising circulars, reports, articles, and books, is camera-ready.

E. Mathematicians, scientists, and engineers use programs which allow the creation of symbols, such as the letters of the Greek alphabet, that are necessary in mathematics and statistics. These programs also allow the easy entry of algebraic equations.

IV. Integrated word processing combines extensive information processing capability with other functions such as spreadsheet, graphics, and database management. Using the information processing program, the inclusion of numbers and graphs to tables in the text document is more easily accomplished.

V. Components of word processing equipment

A. Computers all have certain basic parts regardless of their size, shape, expense, and level of ability.

1. **Central processing unit (CPU)**--the brains of the computer.

2. **Memory**--the place within the computer where information is stored. Two types of memory are ROM (read-only memory), which is permanent, and RAM (random-access memory), which is changeable and reusable.

B. **Input devices**--the keyboard is the most common input device for entering data. Each keystroke must be converted into electrical signals for the central processing unit. The mouse, joystick, and optical character reader are three additional types of input devices.

C. **Output devices**--accept the electrical signals from the central processing unit. Printers and CRT screens are the two most common types of output devices.

D. **Auxiliary storage**--the secondary or external memory for storing information from the computer for later use. Two forms of secondary storage are floppy disks and hard disks.

VI. **Storage components**--the ability to store and retrieve data is an important part of information processing. Two external storage devices used primarily for information processing are:

A. **Floppy disk**--a magnetic medium which resembles a phonograph record, consisting of a disk enclosed within a protective jacket inserted into a diskette drive. Each floppy disk has the storage capability range of approximately 80,000 to 3,000,000 characters.

B. **Hard disk**--a rigid metal platter that allows data to be recorded on the head of the platter and is permanently fixed within the computer.

VII. Basic features of word processing

A. Users can modify portions of text by:

1. Making corrections without having to retype corrected material.
2. Changing left and right margins and tab stops.
3. Copying or moving portions of text.

B. The screen indicates the following:

1. Text within the document.
2. The top and bottom of the page.
3. The left and right margins.
4. The tab settings.
5. The cursor where the next typed character will appear.

C. Keys

1. **Cursor control keys**--are on the keyboard and allow the user to move the cursor and type anywhere in the text area on the screen.
2. **Function keys**--are used to execute common commands such as underlining and printing.

D. Word wrap is a feature which automatically starts a word at the left margin of the next line if there is not enough room on the previous line.

VIII. Steps involved in the word processing cycle

A. Loading the software program.

B. Opening a new document file.

C. Creating a document.

D. Editing a document.

E. Formatting a document.

F. Managing files, including saving and retrieving documents.

G. Printing documents.

H. Clearing the screen or quitting the program.

ACTIVITY 1: INFORMATION PROCESSING TERMINOLOGY WORKSHEET

Project 1

INSTRUCTIONS: **Fill in the blank with the word that best completes the following paragraphs.**

Before starting to type a document, you will make some decisions about how the results will appear. For example, you might choose the ____(1)____ , or number of characters per inch the printer will use. If your hardware and software supports it, you may elect to use ______(2)______ ____(3)____, which adjusts the space occupied by each character, according to its size. You might decide you want to ____(4)____ the ____(5)____(space on the sides), by making them straight on both sides. If your document is long, you might want a ___(6)___ to appear at the top of each page, or a ___(7)___ at the bottom of the page, and you will probably want to ____(8)____ the headings between the margins. Sometimes the document has special sections with columns and things, so you will want to ___(9)___ in order to make it easier to jump to the right place. Of course, you will probably want to ___(10)___ at the first line of each paragraph, or do just the opposite to make ____(11)____ _____(12)_____. To help with some of this _____(13)_____ (arrangements on a page), some software displays a ___(14)___ as a guide at the top of the screen.

Once you start typing, being human, you will probably need to do some ____(15)____, to correct errors, or make changes. Usually, you can insert characters within words, but sometimes you can choose to ____(16)____ instead so that characters are replaced. If extra characters need to be ____(17)____ without leaving a space, that can be done too. If you decide you want to __(18)__ a ___(19)___ of text from one part of the document to another, you can __(20)__ __(21)__ ___(22)___ very conveniently. You can also __(23)__ a block if you need it to appear in more than one place. Word processing programs do many things for you automatically. Some of them even permit dividing of words at the end of a line, by ______(24)______. They will keep you from leaving ___(25)___ and ____(26)____, leaving one line of a paragraph stranded at the top or bottom of a page. Documents that are longer than one page will look good because the __(27)__ __(28)___ feature will control where a new page begins.

ACTIVITY 1 (Continued)

Project 2

INSTRUCTIONS: **Get materials and instructions from your teacher.**

ACTIVITY 2: IDENTIFING USES OF WORD PROCESSING

Project 1

INSTRUCTIONS: **Explain the purpose of computerized information processing, and list at least one application for it in each of the categories listed below.**

The purpose

Business/Industry

Government

Education

ACTIVITY 2 (Continued)

Project 2

INSTRUCTIONS: **Select a business from the list provided by your teacher. Contact the business and observe the various types of applications they use which are related to information processing. Write a one-page report on your observations.**

ACTIVITY 3: WORD PROCESSING EQUIPMENT COMPONENTS

Project 1

INSTRUCTIONS: List and then explain the function of each equipment component within the information processing system.

Project 2

INSTRUCTIONS: Examine current articles and literature for new hardware components that have been introduced during the last six months. Write a one-page paper describing your findings.

ACTIVITY 4: STORAGE DEVICES

INSTRUCTIONS: Examine current articles and literature for new storage devices. Write a one-page paper describing your findings.

ACTIVITY 5: DEMONSTRATION OF EQUIPMENT USE

Project 1

INSTRUCTIONS: Write the command for your word processing program which will cause the equipment to do each of the following.

1. Load the operating system

2. Load the information (word) processing program

3. Open a new document

4. Retrieve an existing document

5. Display help

6. Getting out of trouble

7. Moving around the document

   To move cursor

      One character left

      One character right

      One line up

      One line down

      One word left

      One word right

      To beginning of line

ACTIVITY 5 (Continued)

Project 1 (Continued)

To end of line

To top of document

To end of document

To top of screen

To bottom of screen

To scroll screen up

To scroll screen down

To scroll screen right

To scroll screen left

To next page

To previous page

To specific page

To next tab stop

To previous tab stop

8. Typeover and insert
9. Enter text
10. Delete
11. Save files
12. Print
13. Stop the printer
14. Print to a disk
15. Clear the screen and memory
16. Quit the program

ACTIVITY 5 (Continued)

Project 2

INSTRUCTIONS: **Complete the following steps to successfully enter, proofread, save, and exit an information processing document. (Please note that your teacher may make adjustments to the instructions according to your system's requirements.)**

STEP 1: Load the operating system diskette into the RAM of the computer.

STEP 2: Load the information processing (word processing) program.

STEP 3: Place a formatted data disk in drive B.

STEP 4: Type the following sentence:

President Kennedy used this quotation in his inauguration address: "Ask not what your country can do for you; ask what you can do for your country."

STEP 5: Proofread your copy.

STEP 6: Save the information onto your formatted data disk in drive B. Use your last name as the file name.

STEP 7: Exit the word processing system.

ACTIVITY 5 (Continued)

Project 3

INSTRUCTIONS: **Compete the following steps to successfully enter, proofread, save, and exit an information processing document. In addition, complete the steps to retrieve a file, edit, resave the file, create a backup, and print a copy of the file and a copy of the directory.**

STEP 1: Load the operating system diskette into the RAM of the computer.

STEP 2: Load the information processing (word processing) program.

STEP 3: Place your formatted data disk in drive B.

STEP 4: Retrieve the file saved under your last name.

STEP 5: Insert the following sentence before the sentence you typed in Project 2.

John Kennedy was elected President of the United States in November 1960 and served three years in office beginning in January 1961.

STEP 6: Proofread your copy.

STEP 7: Save the file under your last name.

STEP 8: Retrieve the file (again).

STEP 9: Create a backup file.

STEP 10: Print a copy of the file.

STEP 11: Print a copy of your directory.

STEP 12: Exit the word processing system.

SECTION II: WORD PROCESSING

UNIT II: WORD PROCESSING APPLICATIONS

UNIT OBJECTIVE: Students will be able to apply the capabilities and features of word processing to produce a document.

STUDENT OMPETENCIES: Upon completion of this unit, the student will be able to:

1. Outline and explain the steps in the document production cycle.
2. Use the steps in the document production cycle to produce a document.
3. Explain and demonstrate the formatting features of a word processing software package.
4. Explain and demonstrate the editing features of a word processing software package.
5. Explain and demonstrate the searching/locating features of a word processing software package.
6. Demonstrate the use of the word processing software to produce a report, memo, and letter.

FOCUS: In the word processing system, one needs to understand the difference between writing on a word processor and using a typewriter. When one is familiar with, and has had some practice with the features and commands of the software, he/she is in a position to use the program for document production.

UNIT OVERVIEW

I. Five steps of the document cycle

- A. **Origination**--is the process of converting raw facts and data into usable information.
    - 1. Relaying this information may be done by a variety of methods.
        - a. **Longhand**--is the most popular method; however, it is also the slowest.
        - b. **Dictation**--either shorthand or machine.
        - c. Composition at the keyboard.
        - d. Voice processing, which converts human voice to electronic data, is still in the developmental stages.
    - 2. The originator or author should consider the need to generate documents.
        - a. The cost of producing the document.
        - b. Decide whether the document is really necessary.
        - c. Decide the best method of communicating the idea.
- B. **Processing**--involves converting the information from dictated to hand-written form to finished document.
    - 1. The operator reviews the original copy and selects appropriate style and format.
    - 2. The document is entered into the computer memory usually by means of a keyboard; however, other input methods are available.
        - a. Computer input from microfilm (CIM)
        - b. Optical character recognition (OCR)
        - c. Voice-to-terminal input
- C. **Editing**--is the process of inseting, deleting, and/or correcting text.
- D. **Saving the document**--involves transferring the document from the temporary memory (RAM) of the computer to permanent storage (floppy disk, hard disk).

E. **Distribution** or communication of the information--is the final step in the document cycle.

1. The U. S. Postal Service is by far the most common method of distribution.

2. Courier services provide fast delivery of letters and/or small packages.

3. Electronic delivery systems are becoming more popular.

    a. Telex, TWX, and mailgrams are Western Union systems which use telecommunication lines to transmit information within the U. S. and to foreign countries.

    b. Facsimile equipment transmits data of any type, including signatures and pictures.

    c. Communicating word processors can send information electronically from one terminal to another.

    d. Computer-based messages (CBMS) are software packages which facilitate text communication among compatible terminals.

    e. Voice mail systems are similar to CBMS, except the input method is the human voice.

    f. Local area networks (LANs) permit communication over a short distance, within a building for example.

    g. Audio communications include traditional person-to-person telephone calls and teleconferences for three or more participants.

4. Printing the document involves producing hard copy/copies. Printing may be done on:

    a. Letter quality or draft copy equipment.

    b. Impact or non-impact equipment.

5. Copies may be made by:

    a. Printing multiple copies on the printer.

    b. Carbon or NCR paper.

c. Photocopy machines.

d. Printing machines such as offset, mimeograph, or phototypeset.

e. Facsimile machines to send copies to another location.

II. Word processing software functions

A. **Help**--this function supports your use of the software package. If you get "stuck" or you do not know what to do next, you ask for on-screen help.

1. Most commercially produced software has some form of help function.

2. Depending on the software, help may be made available by topic, function, or level.

3. Some software provide help through their basic structure because they are menu-driven or command-driven.

B. **Formatting**--the first piece of information your system needs to format is your text. Formatting is the process of changing the left, right, top, and bottom page margins, or changing the line spacing for a part of the document or for an entire document. There are several options in the different software packages.

1. **Margins**--left and right margins can be set for the entire document or paragraph by paragraph. You may want to use the default settings of the system.

2. **Tab stops**--used to indent text and align tables and lists. Some programs allow you to set tabs anywhere; others have limits. Decimal tabs are used to align decimal points in columns of numbers. Flush-right tabs allow you to align text flush right instead of the usual flush left.

3. **Paragraph indents**--paragraphs can be formatted so that the first line is indented from the rest of the paragraph. Also, the paragraph can be formatted so that all lines are indented from the left margin or from the left and right margin.

4. **Character formats**--include boldface, centered, doublestrike, italic, underline, double underline, subscripts, superscripts, and strikethrough. These can be used in combinations and assigned to a character, word, paragraph, block, or entire document.

C. **Entering and editing**--the advantage of word processing is its ability to create text easily and to change it. The following are some of the options software packages contain.

1. **Insert and replace (typeover) mode**--adding text to existing documents. When the insert mode is used, characters to the right of new text move to make room for it. When replace (typeover) mode is used, the text does not move and the new text replaces the old.
2. **Deleting**--removing unwanted text from the existing document.
3. **Reformatting**--when text is inserted or deleted in existing text, some programs automatically reformat the text to realign it with the margins; others require a command.
4. **Line spacing**--allows the user to specify the type of spacing (single or double) between lines.
5. **Block operations**--selecting a section of text and performing another function on that section. For example, you can delete, center, underline, boldface, or copy a block.
6. **Moving or cut/paste**--when words, sentences, paragraphs, and entire pages of text are correct, but are in the wrong order. Identify how much text is to be moved ("cut and lift") from its present location and insert ("paste") into the new location. The program automatically adjusts the surrounding text to make room for the new block of text. Many software programs can move blocks of text directly from one file to a new file.
7. **Copy**--similar to a cut-and-paste operation. However, with the copy operation the original version of the text is not affected by the operations. Identify how much text is to be copied, then move to the new location and insert the copied text.
8. **Search and replace**--search makes it easy to locate specific text. Replace is often coupled with the search function. The search and replace feature allows for selected changes to be made to all occurrences of a particular character, word, or phrase. The computer searches through the document character by character to find the selected text.

D. **Printing**--a means of displaying what is on the screen to the printer. There are a number of ways to format the page.

1. **Top and bottom margins**--can be set for the entire document or each page.
2. **Right-justification**--equal spaces are added between the words in order that the right margin is even.
3. **Headers and footers**--printed at the top and bottom of the page. When dealing with a multiple-page report, special information may be desired at the top and/or bottom of each page. This can be entered once and then copied automatically onto each page.

4. **Page number**--some programs will allow the operator to print page numbers on multipage documents. There are several options for their location, such as top or bottom of the page, left, right, center, on odd pages, or on even pages.

5. **Pitch**--some programs permit the printer's pitch to be changed as a document is being printed.

6. **Page breaks**--the user can control where page breaks occur. Ideally, page breaks should be displayed on the screen.

7. **Merge-printing**--used to print many copies of a form document with data integrated from another source, manually, or a file.

E. **Advanced features**--there are several features that are not supported by all software; however, the following features are worth noting.

1. **Split screen**--allows the display of two sections of the same file or separate files on the screen at the same time, so they can be compared, moved, or copied.

2. **Column mode**--allows work with columns. The number of columns will vary with different types of software. A few programs permit creating text on the screen in one column and then printing it out in two or more columns.

3. **Spell checker**--used to find and correct misspellings. Some run from within the program while others are separate packages.

4. **Thesaurus**--used to suggest synonyms for a selected word.

5. **Outlines**--allow for the creation of an outline as used for text entry, editing, and organization.

6. **Macros**--used to record and then manipulate a series of recorded keystrokes.

7. **Windows**--two or more documents can be displayed on the screen at the same time.

8. **Style checkers**--check text for style and usage.

9. **Math/calculator**--a few programs have the capability to make calculations for the operator.

10. **Automatic file backup**--the most recent version is saved in the original file, and the previously saved version will be moved to a backup file where it can be retrieved if necessary.

11. **Automatic saving**--of new or revised documents prevents losing files unintentionally when the user quits the program.

ACTIVITY 1: STEPS IN THE DOCUMENT CYCLE

INSTRUCTIONS: Explain the steps in the document cycle.

Origination

Processing

Editing

Saving

Distribution

ACTIVITY 2: DEMONSTRATE THE USE OF THE STEPS IN THE DOCUMENT CYCLE

Project 1

INSTRUCTIONS: **Complete the following steps to demonstrate your ability to follow the steps in the document cycle.**

STEP 1 Compose (in longhand) a letter of application to an employer who has advertised a job listing in the newspaper.

STEP 2 Load the operating system software into the RAM of the computer.

STEP 3 Load the word processing software into the RAM of the computer and a formatted data disk.

STEP 4 Input the letter using full-block style.

STEP 5 Format the letter using margins of 1 1/2 inches on the left and 1 inch on the right.

STEP 6 Edit the letter, proofreading for all mistakes.

STEP 7 Save the letter.

STEP 8 Print two copies of the letter.

STEP 9 Address the envelope for mailing.

STEP 10 Return the letter and envelope to your teacher.

STEP 11 Print out your directory.

STEP 12 Exit the word processing system.

ACTIVITY 2 (Continued)

Project 2

INSTRUCTIONS: **Complete the following steps to demonstrate your ability to follow the steps in the document cycle.**

STEP 1	Load the operating system software into the RAM of the computer.
STEP 2	Load the word processing software into the RAM of the computer and your data disk (with your file for Project 1).
STEP 3	Load the letter completed in Project 1.
STEP 4	Change the format of style of the letter to semi block following instructions from your teacher.
STEP 5	Change your left margin to one inch.
STEP 6	Edit the memo, proofreading for all mistakes.
STEP 7	Load the spell checker and request the computer to check the spelling of text in this document.
STEP 8	Save the memo.
STEP 9	Print one copy of the memo.
STEP 10	Return the copy of the memo to your teacher.
STEP 11	Print your directory.
STEP 12	Exit the word processing system.

Project 3

INSTRUCTIONS: **Handwrite a letter to a customer to explain that the Flower Sewing Kit that was ordered was so popular that the supply is exhausted and there will be a delay in shipping. Key in the letter, proofread, correct, save, print a hardcopy, prepare an envelope, and place in the out basket.**

ACTIVITY 3: FORMATTING, SEARCHING/LOCATING, AND EDITING FEATURES

Project 1

INSTRUCTIONS: **Write the command for your word processing software and computer system which will cause the equipment to do each of the following format instructions.**

1. Reformatting paragraphs (may be automatic)
2. Setting text tab stops
3. Setting decimal tab stops
4. Deleting tab stops
5. Using search
6. Using replace
7. Displaying hidden characters
8. Selecting a block of text
9. Copying a selected block
10. Moving a selected block
11. Deleting a selected block
12. Writing a block from a document to its own file

ACTIVITY 3 (Continued)

Project 1 (Continued)

13. Reading a file from disk into a document on the screen using windows

14. Changing the left margin

15. Changing the right margin

16. Changing the top margin

17. Changing the bottom margin

18. Adding headers

19. Adding footers

20. Centering text between left and right margin

21. Centering text between top and bottom margin

22. Justifying text

23. Changing the line spacing for the entire document

24. Indenting paragraphs

ACTIVITY 3 (Continued)

Project 1 (Continued)

25. Using hanging indents

26. Boldfacing characters

27. Underlining characters

28. Controlling page breaks

29. Changing lines per page

30. Invoking the spell checker

31. Creating columns

32. Creating macros

33. Invoking a macro

34. Setting up a form document for merging

35. Setting up a file to merge into a form document

ACTIVITY 3 (Continued)

Project 2

INSTRUCTIONS: **Complete the following steps to successfully format, edit, and search a document.**

STEP 1 Load the operating system into the RAM of the memory.

STEP 2 Load the word processing system into the RAM of the memory and insert a formatted disk in drive B.

STEP 3 Input the following sentences (single spacing between the lines):

> **A worker's responsibility involves more than just performing a job. Employers expect workers to work with a positive attitude toward the job and other employees.**

STEP 4 Format the report changing the spacing to double space and margins to one inch on the left and right.

STEP 5 Edit the sentences, proofreading for all mistakes.

STEP 6 Search the sentences to locate the word, "worker's" and replace it with the word, "employee's."

STEP 7 Delete "and other employees" in the second sentence.

STEP 8 Save the sentences.

STEP 9 Print one copy.

STEP 10 Print out your directory.

STEP 11 Exit the word processing system.

ACTIVITY 3 (Continued)

Project 3

INSTRUCTIONS: **Complete the following steps to successfully format, edit, and search a document.**

STEP 1 Load the operating system into the RAM of the computer.

STEP 2 Load the word processing software and formatted disk in drive B.

STEP 3 Input the following outline:

IV. WHAT EMPLOYERS MAY EXPECT FROM EMPLOYEES

- A. Cooperation--involves sharing tasks when appropriate.
- B. Honesty--most employees are truthful with their employers.
- C. Initiative--an employee should always show interest in developing new job skills.
- D. Willingness to learn--it is to the employee's advantage to learn everything possible about his/her job.
- E. Willingness to follow directions--an employee should try to follow directions exactly.
- F. Dependability--a dependable employee is one whom an employer can expect to be on the job daily and on time.
- G. Enthusiasm--the best employees like their jobs and show a sincere interest in job performance.

STEP 4 Format the outline setting the margins to one inch on the left and right.

STEP 5 Edit the report, proofreading for all mistakes.

STEP 6 Save the outline onto the formatted data disk.

STEP 7 Print two copies of the outline.

STEP 8 Print the directory.

STEP 9 Exit the word processing system.

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ACTIVITY 3 (Continued)

Project 4

INSTRUCTIONS: **Enter the basic word processing document provided by your teacher. Using the instruction sheet, format, edit, locate, and make replacements as required. Print a copy of the document after each step has been completed.**

ACTIVITY 4: DOCUMENT PRODUCTION USING WORD PROCESSING TECHNIQUES

Project 1

INSTRUCTIONS: Prepare a letter using the instructions provided by your teacher. Make sure you proofread the document before handing it to your teacher.

Project 2

INSTRUCTIONS: Write a memo to your teacher requesting that you be excused from class tomorrow. Proofread, correct, save, print a hard copy, and distribute.

Project 3

INSTRUCTIONS: Using current articles, write a one-page double-spaced report about new word processing programs and/or features.

SECTION III

ELECTRONIC SPREADSHEET

ESSENTIAL ELEMENTS

75.87 (e)(3), (5)(B)

3. Concepts and skills related to spreadsheets. The student shall provided opportunities to:

    A. Demonstrate higher-level spreadsheet concepts; and

    B. Apply higher-level capabilities of spreadsheets.

5. Concepts and skills related to advanced application software. The student shall be provided opportunities to:

    B. Demonstrate the ability to apply information processing concepts and skills to realistic business situations.

SUGGESTED LESSON PLAN

SECTION III: ELECTRONIC SPREADSHEETS

UNIT I: CONCEPTS OF ELECTRONIC SPREADSHEETS

ESSENTIAL ELEMENTS: 75.87 (e)(3)(A), (5)(B)

ALLOCATED TIME: 10 Hours

UNIT OBJECTIVE: Students will explain what electronic spreadsheets are used for, describe their capabilities, use terminology common to most spreadsheet software, compare software packages, and discuss the application of the software to business problems.

STUDENT COMPETENCIES: Upon completion of this unit, the student will be able to:

1. Use terminology common to electronic spreadsheets.
2. Describe the structure of electronic spreadsheets, and the purposes for which they are used.
3. Identify capabilities of electronic spreadsheets.
4. Contrast and compare electronic spreadsheet software packages.

FOCUS: The electronic spreadsheet is still considered the prime business tool of the 90's. Its versatility, power, and ease of use have made the spreadsheet essential in virtually every office where microcomputers are used. It is used by top management, clerks, and all those employees in between. Any time numbers are used, there is an application for a spreadsheet, and new applications are being discovered and developed every day.

DOMAINS: Activities and competency tests have been designed to provide learning experiences utilizing the cognitive, psychomotor, or affective domains. Activities and competency tests are coded on the Activity and Competency Test Matrices.

BASIC SKILLS: Activities and competency tests have been designed to reinforce the basic skills of reading, writing, and/or mathematics. Activities and competency tests have been coded on the Activity and Competency Test Matrices.

CONTENT OUTLINE

I. Introduction to spreadsheet technology
    A. Explanation of spreadsheets
    B. Advantages of using spreadsheets
    C. Using electronic spreadsheets in business
    D. Decisions to make
    E. Development of the spreadsheet
    F. The history of VisiCalc

II. Spreadsheet structure
    A. Cell representation
    B. Functions and operations
    C. Limited data storage
    D. Modes

III. Concepts of using spreadsheets.
    A. Screen moves
    B. Data entry
    C. Controlling the appearance of data
    D. Ranges
    E. Function keys
    F. Cell addresses
    G. Moving data and cells

IV. Capabilities
    A. Arithmetic
    B. Functions

C. Printing

D. Macros

V. Comparison of spreadsheet packages

A. The computer that is to be used

B. Requirements

C. Ease of use

D. Cost and support

SUGGESTED TEACHER ACTIVITIES

General Teacher Preparation

1. Preview the unit.
2. Review unit objectives.
3. Make instructional analysis.
4. Assess student learning needs.
5. Decide on lesson domain: cognitive, psychomotor, or effective domain.
6. Select instructional materials based on instructional analysis and student learning needs.
7. Select instructional strategies based on lesson content and student learning needs.
8. Prepare lesson plans from the unit lesson.
9. Prepare additional instructional material.
10. Reserve necessary media and equipment.

Teacher Presentation

1. Present student objectives.
2. Establish rapport with students.
3. Review lesson objectives with students.
4. Relate lesson to prior or future learning.
5. When appropriate, encourage student interaction through questioning, discussions, or some other strategy.
6. Emphasize the value/importance of the unit or activity.
7. Allow time for closure of a lesson.

Reteach Activities

1. Identify area(s) of weakness from results of evaluation.
2. Select unit activities not previously used.
3. Use additional resources and/or create materials based on student learning needs.
4. Use a different teaching strategy in reteaching.
5. Retest.

Specific Teaching Activities

1. Become familiar with spreadsheet software.
2. Obtain sample formats of manual worksheets, electronically produced worksheets, graphic representations and spreadsheet software brochures.
3. Prepare transparencies to illustrate the command categories that are common to spreadsheets.
4. Select workbook assignments or prepare assignments to handout as worksheets.
5. Develop a list of spreadsheet examples, including some to which students can relate.
6. Make printouts and/or transparencies of sample spreadsheets.
7. Identify reference manual sections that will be useful to the students.
8. Select exercises and drills from resources to complete the section.
9. Duplicate data diskettes with predesigned templates to use for exercises.

Activity 4

Project 1 Gather current literature on spreadsheet software.

Competency Test Develop a spreadsheet.

ACTIVITY MATRIX

Activities	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
1	X				X	
2 Project 1	X				X	
Project 2	X				X	
3 Project 1	X				X	
Project 2	X				X	
4	X			X	X	

COMPETENCY TEST MATRIX

Parts	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
1	X			X		
2-4 Project 1	X			X		
Project 2	X				X	

COMPETENCY TEST

PART I: TERMINOLOGY

INSTRUCTIONS: **Complete the following statements with the appropriate term.**

1. The intersection of a row and column on a spreadsheet is called a ____________________.
2. A __________________ command is one that applies to the entire worksheet.
3. Spreadsheet data that consists of characters is called a _________________.
4. Reference to a cell in relation to another cell is called a _________________ reference.
5. A ________________ command consists of a sequence of commands and/or functions.
6. A spreadsheet model with labels and formulas, but no data is a ___________________.
7. Moving up, down, right, or left through a worksheet is called ______________________.
8. Most commands are accessed through a command ________________.
9. Business people use a "________________" model as a technique for experimenting with different data values.
10. A __________ is a rectangular block of one or more cells within a spreadsheet.

PARTS II-IV: STRUCTURES, CAPABILITIES, AND COMPARISONS OF SPREADSHEETS

Project 1

INSTRUCTIONS: Place T for True or F for False in front of each question.

_____ 1. The four keys with arrows on them are called function keys.

_____ 2. The columns in a spreadsheet are identified by letters.

_____ 3. A cell is addressed by the row identifier, followed by the column identifier.

_____ 4. All screen moves are made, one column or row at a time.

_____ 5. The electronic spreadsheet was modeled after the architect's worksheet.

_____ 6. Formulas are treated as values, like numeric cells, rather than as labels.

_____ 7. Numeric data can be lined up either on the left or the right within a cell.

_____ 8. Labels may be lined up on the left or right, or they may be centered within a cell.

_____ 9. The width of label cells can be changed, but the width of numeric cells is always the same.

_____10. Cells can be formatted to display numbers with percent signs.

_____11. Function keys are used to conserve keystrokes.

_____12. Data can be moved from one column to another, but not to another row.

_____13. It is possible to insert a new row between two existing rows, without disturbing the data.

_____14. A column may be deleted, but only if it contains no data.

_____15. Spillover of data into an adjacent column, applies only to labels.

_____16. Data can be erased from any cell, unless it is protected.

_____17. Mathematical functions have special names, and are used in formulas.

_____18. When the date function is called, the user is asked to type in the current date.

_____19. A special program is needed to control printer options, such as margins and spacing.

_____20. The logical function IF, makes conditional operations possible.

PARTS II-IV (Continued)

Project 2

INSTRUCTIONS: Discuss the following questions.

1. Describe what considerations need to be taken in comparing spreadsheet software packages.

2. Describe the different types of business applications for spreadsheet software.

3. How is the maximum allowable size for a worksheet determined?

PARTS II-IV (Continued)

Project 2 (Continued)

4. Name and describe three different modes that a spreadsheet program might operate under.

    1)

    2)

    3)

5. Draw and describe the components of a spreadsheet screen.

ANSWERS TO ACTIVITIES

Activity 1

1. **Absolute**--refers to a specific row, column, or cell by name, not by its relative location.
2. **Address**--also called cell address. The location of a cell, identified by its row and column.
3. **Cell**--the intersection of a row and column, where data is entered.
4. **Format**--refers to the rules for how data will be stored and displayed.
5. **Formula**--calculation rules that let the computer do mathematics.
6. **Global**--refers to a command that applies to the entire worksheet, rather than a cell or limited range.
7. **Label**--data in a spreadsheet cell that contains alphanumeric rather than numeric data.
8. **Macro**--a programming command that gives a name to a sequence of commands.
9. **Menu**--the method by which commands are usually accessed.
10. **Range**--a rectangular block of cells that is identified or highlighted.
11. **Relative**--describes a cell address in relation to another address rather than by its coordinates.
12. **Scroll**--to move the worksheet up, down, right, or left, to display different portions on the screen.
13. **Template**--a reusable model of a spreadsheet that has been created with labels, formatting, and formulas, but without variable data.
14. **What-if model**--a technique for experimenting, by using a worksheet to change values of data to see what the result will be.
15. **Window** (viewing window)--the portion or portions of the worksheet that are visible on the screen.

Activity 2

Project 1

The structure of an electronic spreadsheet is similar to an accountant's worksheet with numerous rows and columns. Rows and columns are displayed on the screen and words or values can be entered where desired. Each cell represents a unit of the computer's internal memory.

Project 2 Evaluated to the satisfaction of the instructor.

Activity 3

Project 1

1. Planning
   a. Analyzing financial statements
   b. Forecasting business cycles
   c. Projecting cash flow
   d. Trend analysis
   e. Financial models
   f. Management models
2. Decision making
   a. Compare and prepare bids
   b. Analyze the performance of products
   c. Compare costs and profit margins for products
   d. Compare performance of different branches
   e. Evaluate the results of operational changes
3. Recordkeeping
   a. Accounting records
   b. Sales reports
   c. Production data
4. Selling or convincing others
   a. Producing figures that people can have confidence in
   b. Displaying results graphically
   c. Summarizing important facts

Project 2 Evaluated to the satisfaction of the instructor.

Activity 4 The worksheet information will vary according to the software evaluated. Activity to be evaluated to the satisfaction of the instructor.

COMPETENCY TEST ANSWERS

Part I

1. Cell
2. Global
3. Label
4. Relative
5. Macro
6. Template
7. Scrolling
8. Menu
9. What-if
10. Range

Part II-IV

Project 1

1. F
2. T
3. F
4. F
5. F
6. T
7. F
8. T
9. F
10. T
11. T
12. F
13. T
14. F
15. T
16. T
17. T
18. F
19. F
20. T

Project 2 Evaluated to the satisfaction of the instructor.

COMPETENCY CHECKLIST

ESSENTIAL ELEMENTS: 75.87 (e)(3)(A), (5)(B)

The student will be provided opportunities to demonstrate basic spreadsheet concepts; and demonstrate the ability to apply information processing concepts and skills to realistic business situations.

OBJECTIVE:	Students will explain what electronic spreadsheets are used for, describe spreadsheet capabilities use terminology common to most spreadsheet software, compare software packages, and discuss the application of the software to business problems.	MASTERY	NON-MASTERY
1.	Use terminology common to electronic spreadsheets.	______	______
2.	Describe the structure of electronic spreadsheets, and the purpose for which they are used.	______	______
3.	Identify capabilities of electronic spreadsheets.	______	______
4.	Contrast and compare electronic spreadsheet software packages.	______	______
		______	______
		______	______

STUDENT NAME ______________________________

SUGGESTED UNIT LESSON PLAN

SECTION III: ELECTRONIC SPREADSHEETS

UNIT II: ELECTRONIC SPREADSHEET APPLICATIONS

ESSENTIAL ELEMENTS: 76.87 (e)(3)(B), (5)(B)

ALLOCATED TIME: 15 Hours

UNIT OBJECTIVE: Students will use proper procedures in starting up a spreadsheet program, design and use a template, utilize advanced functions of the software, including macros, print, graph, and save the results.

STUDENT COMPETENCIES: Upon completion of this unit, the student will be able to:

1. Plan a spreadsheet and design a template for it.
2. Enter and manipulate data.
3. Write and use a simple macro.
4. Demonstrate some advanced mathematical functions.
5. Print and graph the results and save the template.

FOCUS: Those who have learned to use an electronic spreadsheet have a valuable skill, but to take full advantage of the power of the software calls for more than entering data into a predesigned worksheet. Those who benefit most from this important tool are those who use it to solve problems of their own. One can go to any level he/she desires, including programming the spreadsheet to carry out commands automatically.

DOMAINS: Activities and competency tests have been designed to provide learning experiences utilizing the cognitive, psychomotor, or affective domains. Activities and competency tests are coded on the Activity and Competency Test Matrices.

BASIC SKILLS: Activities and competency tests have been designed to reinforce the basic skills of reading, writing, and/or mathematics. Activities and competency tests have been coded on the Activity and Competency Test Matrices.

CONTENT OUTLINE

I. Setup procedures

II. Design format

   A. Identify the data to be used

   B. Inspect data and anticipate the form of the results

   C. Select column and row headings

   D. Titles or comments, and the headings

   E. Lock in the titles

   F. Data entry

III. Enter and manipulate data

   A. Enter the data into the cells

   B. Enter formulas

   C. Copy the formulas to other cells

   D. Check results

IV. Designing templates

   A. Define templates

   B. Purpose of templates

   C. Protecting template

   D. Ready-made templates

V. Using advanced functions

   A. Advanced mathematical functions

   B. Kinds of activities where formulas could be used

   C. Creating and using macros

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SUGGESTED TEACHER ACTIVITIES

General Teacher Preparation

1. Preview the unit.
2. Review unit objectives.
3. Make instructional analysis.
4. Assess student learning needs.
5. Decide on lesson domain: cognitive, psychomotor, or effective domain.
6. Select instructional materials based on instructional analysis and student learning needs.
7. Select instructional strategies based on lesson content and student learning needs.
8. Prepare lesson plans from the unit lesson.
9. Prepare additional instructional material.
10. Reserve necessary media and equipment.

Teacher Presentation

1. Present student objectives.
2. Establish rapport with students.
3. Review lesson objectives with students.
4. Relate lesson to prior or future learning.
5. When appropriate, encourage student interaction through questioning, discussions, or some other strategy.
6. Emphasize the value/importance of the unit or activity.
7. Allow time for closure of a lesson.

Reteach Activities

1. Identify area(s) of weakness from results of evaluation.
2. Select unit activities not previously used.
3. Use additional resources and/or create materials based on student learning needs.
4. Use a different teaching strategy in reteaching.
5. Retest.

Specific Teaching Activities

1. Become familiar with spreadsheet software.
2. Obtain sample formats of manual worksheets, electronically produced worksheets, graphic representations, and spreadsheet software brochures.
3. Prepare transparencies to illustrate the command categories that are common to spreadsheets.
4. Select workbook assignments or prepare assignments to handout as worksheets.
5. Develop a list of spreadsheet examples, including some to which students can relate.
6. Make printouts and/or transparencies of sample spreadsheets.
7. Identify reference manual sections that will be useful to the students.
8. Select exercises and drills from resources to complete the section.
9. Duplicate data diskettes with predesigned templates to use for exercises.
10. The competency test is designed to cover all competencies.

ACTIVITY MATRIX

Activities	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
1	X	X		X	X	X
2 Project 1	X	X			X	
Project 2	X				X	
3	X	X			X	
4	X	X			X	X
5	X	X		X	X	X

COMPETENCY TEST MATRIX

Parts	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
I	X	X		X	X	X

COMPETENCY TEST

INSTRUCTIONS: Create a spreadsheet to calculate baseball team averages.

1. Write a macro for calculating batting averages. The macro should divide the number of hits by times at bat for each member of the team.
2. Plan functions to show the total times at bat for the team, total hits for the team, the team batting average, and the highest average for a player.
3. Make a template with headings, column formatting, the macro, and functions.
4. Enter the data (as listed below).
5. Invoke the macro.
6. Print a report of the results.
7. Graph the batting averages.

Data for spreadsheet:

Name	Games	At Bat	Hits
Anderson	2	4	1
Baker	1	3	1
Bell	4	6	1
Day	21	62	17
DeVille	2	3	0
Dudley	7	22	4
Gould	21	60	19
Grieske	21	65	15
Guerra	3	5	2
Jackson	8	25	8
Jones	21	70	24
Kelly	6	9	2
King	21	67	16
Martinez	19	55	13
Melton	9	19	6
Phillips	21	67	20
Rizzo	21	69	18
Roppino	10	31	8
Tharpe	6	7	1
Wandowski	5	14	3
Werington	20	59	18

ANSWERS TO ACTIVITIES

Activity 1 Evaluated to the satisfaction of the instructor.

Activity 2

Project 1 Evaluated to the satisfaction of the instructor.

Project 2 Evaluated to the satisfaction of the instructor.

Activity 3 The following is one of several solutions. Answers may vary according to the spreadsheet program you are using.

```
\D     ^JAN{RIGHT}^FEB{RIGHT}^MAR{RIGHT}
       ^APR{RIGHT}^MAY{RIGHT}^JUN{RIGHT}
       ^JUL{RIGHT}^AUG{RIGHT}^SEP{RIGHT}
       ^OCT{RIGHT}^NOV{RIGHT}^DEC~{END}{LEFT}
```

Activity 4

1. 4
2. 4
3. 2.8698289
4. 0.658964
5. 2.236067

Activity 5 Evaluated to the satisfaction of the instructor.

COMPETENCY TEST ANSWERS

Assuming that the At Bats are in C3 through C23, and the Hits are in D3 through D23, the following macro, or its equivalent, will produce the averages.

```
{goto}E3~
+D3/C3~
'/C~{down}.{down 19}~
```

The correct batting averages are:

.317
.236
.222
.250
.333
.182
.258
.400
.167
.231
.274
.320
.299
.000
.261
.239
.305
.143
.316
.343
.214

Total times at bat

722

Total hits

197

Team Average

.253

Highest Average

.400

COMPETENCY CHECKLIST

ESSENTIAL ELEMENTS: 75.87(e)(3)(B), (5)(B)

The student shall be provided opportunities to apply higher level capabilities of spreadsheets; and demonstrate the ability to apply information processing concepts and skills to realistic business situations.

OBJECTIVE: **Students will startup a spreadsheet program, design and use a template, utilize advanced functions of the software, including macros, print and graph commands, and save the results.**

		MASTERY	NON-MASTERY
1.	Plan a spreadsheet and design a template for it.	________	________
2.	Enter and manipulate data.	________	________
3.	Write and use a simple macro.	________	________
4.	Demonstrate some advanced mathematical functions.	________	________
5.	Print and graph the results and save the template.	________	________
		________	________
		________	________

STUDENT NAME ______________________________________

SECTION III: ELECTRONIC SPREADSHEETS

UNIT I: CONCEPTS OF ELECTRONIC SPREADSHEETS

UNIT OBJECTIVE: Students will explain for what purpose electronic spreadsheets are used, describe spreadsheet capabilities, use terminology common to most spreadsheet software, compare software packages, and discuss the application of the software to business problems.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Use terminology common to electronic spreadsheets.
2. Describe the structure of electronic spreadsheets, and the purpose for which they are used.
3. Identify capabilities of electronic spreadsheets.
4. Contrast and compare electronic spreadsheet software packages.

FOCUS: The electronic spreadsheet is still considered the prime business tool of the 90's. Its versatility, power, and ease of use have made the spreadsheet essential in virtually every office where microcomputers are used. It is used by top management, clerks, and all those employees in between. Any time numbers are used, there is an application for a spreadsheet, and new applications are being discovered and developed every day.

TERMINOLOGY

Absolute	Refers to a specific row, column, or cell by name, not by its relative location.
Address	Also called cell address. The location of a cell, identified by its row and column.
Cell	The intersection of a row and column, where data is entered.
Format	Refers to the rules for how data will be stored and displayed.
Formula	Calculation rules that lest the computer do mathematics.
Global	Refers to a command that applies to the entire worksheet, rather than a cell or limited range.
Label	Data in a spreadsheet cell that contains alphanumeric rather than numeric data.
Macro	A programming command that gives a name to a sequence of commands.
Menu	The method by which commands are usually accessed.
Range	A rectangular block of cells that is identified or highlighted.
Relative	Describes a cell address in relation to another address rather than by its coordinates.
Scroll	To move the worksheet up, down, right, or left, to display different portion on the screen.
Template	A reusable model of a spreadsheet that has been created with labels, formatting, and formulas, but without variable data.
What-if model	A technique for experimenting, by using a worksheet to change values to data to see what the result would be.
Window	The portion or portions of the worksheet that are visible on the screen.
Wait mode	A condition that exists while the computer is busy with an operation, and no command will be accepted until the computer is finished.

UNIT OVERVIEW

I. Introduction to spreadsheet technology

A. Explanation of spreadsheets

1. Accountants are familiar with the spreadsheet because they are accustomed to working with numerous rows and columns of data.

    a. The name "spreadsheet" comes from the term accountants use to describe the large worksheets on which they organize their figures and categories.

    b. Electronic spreadsheets follow the same format, except that the computer's memory and screen replace the paper.

2. Rows and columns are displayed on the screen, and words or values can be entered where desired.

    a. The small size of the screen is no limitation because the spreadsheet can be much larger than what can be seen at one time.

    b. The computer's computational powers are available for adding, subtracting, or doing any kind of manipulation of the data, once entered.

    c. Any kind of problem that can be set up using this format can be solved with an electronic spreadsheet.

B. Advantages of using spreadsheets

1. Spreadsheets give the microcomputer user a combination of flexibility and ease of use with these a power of calculation that has not generally been available, even on minicomputer systems.

    a. Budgeting, financial analysis, and forecasting are much more fluid tasks with the use of spreadsheets.

    b. There are several reasons why they work so well.

2. Spreadsheets allow for neat, organized entry of numerical information.

    a. Changes may be made whenever necessary either to update or to correct mistakes.

    b. The end product does not have any messy erasures or cross outs.

3. Only the amount of memory in the computer limits the size of the spreadsheet.

    a. Pencil and paper spreadsheets become impossible to handle with only 20 or 30 rows.

    b. The electronic spreadsheet may be hundreds of entries long and wide.

    c. The calculations may be changed quickly, and movement around the various worksheets can be accomplished quickly.

4. Mathematical formulas, figures, and labels may be entered into spreadsheets. Calculators are eliminated--all calculations are completed within the electronic worksheet.

5. Refiguring of the results of all formulas whenever a number is changed can be accomplished with one keystroke, thus allowing "what if" questions to be answered.

C. Using electronic spreadsheets in business

1. The first users to discover spreadsheets were management level executives, who found them invaluable for activities such as sales summaries, planning, and forecasting.

    a. The spreadsheet is often thought of primarily as a decision-making tool.

    b. Users at all levels have found that numerical data can be handled more easily with a spreadsheet than any other way. Below are examples of the types of help that business people can get from using spreadsheets.

2. Planning

    a. Analyzing financial statements

    b. Forecasting business cycles

    c. Projecting cash flow

    d. Trend analysis

    e. Financial models

    f. Management models

3. Decision making

    a. Compare and prepare bids

b. Analyze the performance of products

c. Compare costs and profit margins for products

d. Compare performance of different branches

e. Evaluate the results of operational changes

4. Record keeping

a. Accounting records

b. Sales reports

c. Production data

5. Selling or convincing others

a. Producing figures in which people can have confidence

b. Displaying results graphically

c. Summarizing important facts

D. Decision-making assistance continues to be the most valuable reason for using a spreadsheet because it allows users to do things that could not be done without it.

1. The ability to change one figure and let the computer totally recalculate a set of results means that decisions can be tried in advance on the computer, without spending any money.

2. While it is still true that the results are only as good as the data that goes in, a carefully designed spreadsheet is as accurate as the same data in any other form and is tremendously more flexible.

E. Development of the spreadsheet

1. The first spreadsheet program (VisiCalc) was designed for the Apple II.

a. Like so much of the software used in the 1980s, it was not developed commercially at first, but by an individual for his own use.

b. VisiCalc's value was soon recognized, and it became the best-selling computer program in the microcomputer world.

2. Before long, versions were made for other popular micros, and this was followed by a rush of competitors, each trying to capture a market share by offering improvements and new features.

3. The all-time best-selling program, LOTUS 1-2-3, was developed for the IBM personal computer, and is available for all compatible models.

    a. Many other spreadsheet programs have come along since 1-2-3, and although LOTUS Corporation has come out with even more sophisticated software, 1-2-3 still ranks at the top in 1988.

    b. LOTUS 1-2-3 is not only a spreadsheet but it also integrates a database program and a graph generator.

F. The history of VisiCalc

1. Because it was first, VisiCalc rates a special place in history.

    a. VisiCalc was the invention of Dan Bricklin, who at the time was a graduate student at Harvard Business School.

    b. He designed it as a way to save time and effort in doing some of his assignments.

2. Bricklin and a friend, Robert Frankston, formed their own company to market the exciting new program in 1979.

    a. VisiCalc took Apple II users by storm nationwide. Wherever it was shown, Apple owners clamored to buy it.

    b. Another product from their company, Desktop Plan, came out about the same time, and was received with excitement, but did not achieve the success of VisiCalc.

3. Bricklin and Frankston soon produced versions of VisiCalc for all the popular microcomputers of the time. Sales continued to be high until, gradually, competitors' products took more and more of the market share, and at the same time, the sellers and producers of VisiCalc were having internal conflicts.

4. VisiCalc is no longer produced, and the popular Appleworks program has almost sole possession of the Apple II market for spreadsheets and integrated software. As stated above, LOTUS 1-2-3 and its competitors control the MS-DOS (IBM compatible) market.

II. **Spreadsheet structure**--to the user, a spreadsheet appears as a table of cells, some of which are displayed on the computer's screen while the program is in operation.

A. Each cell actually represents a unit of the computer's internal memory.

1. Any type of data can be stored in each of these memory locations but numbers are stored using a different type code than text and special characters. That is why there are different rules for label cells and value cells.

2. The label cell data is stored using the text code.

B. Each of the functions and operations that are performed cause the computer to make changes in the contents of one or more memory locations.

1. Sometimes it means moving or copying from one location to another.

2. Sometimes it means placing a different value in a location.

3. Part of the computer's memory is dedicated to keeping up with where everything is stored. It uses a kind of index system, so that when a row of figures is used, any reference to it will be forwarded to the right place.

C. The amount of data that can be stored is limited because the data in the cells, the instructions for carrying out the commands, the commands themselves, and the index and instructions that go with it are all in memory at once.

1. Most computers that are used in classrooms have enough memory for between 64,000 and 640,000 characters; thus, the maximum size of the spreadsheet varies considerably.

2. In businesses, this memory amount varies even more with hard disks.

D. There are different modes during operation of a spreadsheet program. When the program is in "ready" mode, it is ready for data to be entered, or for a command to be given. When it is in any other mode, only keystrokes recognized for that mode will be accepted. The modes vary with the software product.

1. **Wait mode**--the computer is busy with some operation, such as calculating or saving a file. No command will be accepted until the computer is finished.

2. **Edit mode**--any cell that the cursor highlights can be edited, but nothing else is allowed. If an error in syntax has been made during data entry, the program will automatically go into edit mode. The user can also point to a cell, and give a command that will put the program into edit mode.

3. **Label**--when the first character has been typed during data entry, if it is a letter or special character (with certain exceptions), the program goes into label mode, and everything that is typed in the cell will be considered a label.

4. **Value**--when the first typed character is a digit or sign (or certain special characters), the program is in value mode. Value mode is used for entering formulas.

5. **Point**--if a command is started that requires additional information about the data to be operated upon, the program is in point mode until the command is completed.

6. **Error**--a command, function, or formula has been entered incorrectly. The only remedy is to escape with the ESC key. This will back it up to the previous step.

7. **Menu**--pressing the key that activates the command menu puts the program into menu, or command, mode. Only a recognized command, or the Escape key is accepted.

III. Concepts of using spreadsheets

A. Screen moves

1. **Single cell moves**--when working with data on the screen, arrow keys allow the user to move in any direction, to the cell above, below, right, or left. This results in scrolling, one row or column at a time.

2. **Page moves**--for faster movement with larger spreadsheets, there are commands to move the pointer the distance of an entire screen display, in any of the four directions. This results in much faster scrolling because of the larger jumps.

3. **Go To moves**--a function key is used to command the program to move immediately to any desired place in the worksheet, identified by a cell address.

4. **Special moves**--commands can be given to go to the beginning or end of the worksheet, or to a location of an identified block of cells.

B. **Data entry**--data that is typed into a worksheet is always identified as one of three types.

1. Labels

a. On the original spreadsheet, labels were column and row headings. These headings were needed to identify the contents of the rows and columns of the worksheet.

b. As spreadsheets began to be used for so many other purposes, many other uses were found for labels, so that paragraphs of text are often included as labels.

c. When data is entered into a cell, it is recognized as a label if it begins with a letter, blank space, or most special characters.

d. Once identified as a label, the cell may not be used for calculations or other numeric functions, even if the data is a blank space followed only by digits.

e. Labels are normally entered left-justified, meaning they begin in the first column of the cell, but labels can also be centered, or lined up on the right, if desired.

2. Numbers

a. Any data that is to be used in calculating is considered numeric.

b. It is identified by the program as numeric if it begins with a digit, plus or minus sign, or certain special characters.

c. When numbers are entered, they are automatically right-justified, meaning they are lined up in columns with an even right-hand margin.

d. A number cannot be centered or left-justified. Any attempt to do so will result in it being changed to a label.

3. Formulas

a. Formulas are treated as numeric cells, but instead of entering a value which is displayed in the cell, an expression is typed in, and the evaluated result is displayed in the cell.

b. The expression can be made up of any combination of numbers, cell addresses, and arithmetic operators or functions. The entry rules are the same as for numbers.

c. Because formulas frequently begin with a cell address which starts with a letter, a plus sign or left parenthesis can be used to indicate that the entry is not a label.

d. There is a formatting option that will permit the formula to be displayed in the cell, as well as the calculation results.

C. Controlling the appearance of data

1. Two ways of controlling appearance are (1) changing the size of the cells, and (2) giving format specifications for numeric and formula cells.

a. Column width

(1) The user can override the default column width (usually nine characters) with a command that changes the width of all columns, or a command to change a single column.

(2) If a column is too narrow to hold all the data that has been entered into a cell, the data will still be stored, but it will not be visible unless the cell width is altered.

(3) An exception is when label data, such as a long title, exceeds the width of the cell, and the adjacent cell(s) on the right are empty.

(4) In this circumstance, the label will "spill over" into the empty columns on the screen display. If data are entered later into the empty cell, the "spilled over" data will no longer be visible. It will, however, still be stored in memory.

b. Format specifications

(1) Additional commands allow greater control over numeric cells. The default is usually to display a number just as it was entered, without any commas or dollar signs. If a number is too large, it will be displayed in scientific notation.

(2) There are several options that can be selected, either for a particular cell or range of cells, or for the entire worksheet.

(a) **Currency**--this option displays all numbers in standard dollars and cents form.

(b) **Fixed decimal places**--the user can specify how many places numbers will be carried.

(c) **Comma**--large numbers can be grouped in the normal way, with commas.

(d) **Percentage**--the value will be multiplied by 100, and a percent sign displayed.

(e) **Signs**--plus or minus signs can be displayed.

D. Ranges

1. Blocks of data cells that are to be used together for some commands may be highlighted together so that one command will perform the operation on all the data.

2. If the same block will be used frequently, it may be given a name for easy reference. When this is done, it is called a range name. The ability to address a range of data as a unit is a great timesaver when working with a spreadsheet.

E. Function keys

1. Software developers can predict what commands will be used most often, and can assign those commands to one of the computer's special function keys.
2. The result of this designation is the reduction of several keystrokes each time the command is called. Some of the commands that are frequently assigned to function keys are Go To, Edit, and Calculate.
3. The use of the function keys is not the same for all spreadsheet programs.

F. Cell addresses

1. Each individual cell can store data, and each cell has an address. This address is a combination of coordinates.
2. Columns are identified by letters, starting with A through Z, then AA, AB, AC and so on.
3. Rows are numbered beginning with 1.
4. The upper left cell address is A1.
5. The total number of available rows and columns varies with the software, but in reality, there are usually more cells available than there is memory to store them.
6. A cell can be referred to by its address, or in relation to its distance from another known location. This relationship is called an offset, and is useful for many timesaving operations.

G. **Moving data and cells**--there was not much an accountant could do to change the rows and columns of a paper spreadsheet once it was started. With an electronic spreadsheet, there is almost no limit to the possible moves and changes.

1. **Inserting**--a row or a column can be added at any time. All the columns to the right of an inserted column, or all rows below an inserted row are renamed correspondingly, and all existing formulas are adjusted for the new addresses.
2. **Deleting**--rows or columns can be removed as easily as they can be inserted. Again, the other row or column names are adjusted as needed, as are formula references. Any data stored in the deleted cells is lost.
3. **Moving data**--the contents of any cell, or range of cells can be relocated from one address to another.

4. **Copying**--cell data is moved to a new location, but not deleted from the previous location. As many copies can be made as desired.

5. **Erase**--the contents of a cell can be deleted without changing the arrangement of cells.

IV. **Capabilities**--once data are entered into cells, there are a number of operations that can be performed.

A. **Arithmetic**--addition, subtraction, multiplication, division, and exponentiation are performed with the use of operators in formulas.

B. **Functions**--many special operations are named within the spreadsheet software, and can be called upon within a formula. Which functions are available varies with the software.

1. **Mathematical**--some or all of the following may be included.

a. **INT**--finds the whole number value of a cell.

b. **MOD**--finds the integer remainder in division.

c. **SQRT**--finds the square root.

d. **ABS**--finds the absolute value.

e. **RAND**--chooses a random number between 0 and 10.

f. **ROUND**--rounds to a given number of places.

g. **LOG**--finds the Log base 10.

h. **EXP**--the exponentiation function.

i. **LN**--the Natural Log.

j. **PI**--the value 3.14159.

2. **Trigonometric functions**--SIN, COS, TAN, ASIN, ACOS, ATAN are all available with some software.

3. **Statistical**--most programs have the following capabilities:

a. **SUM**--totals any group of cells.

b. **AVG**--averages a set of values.

c. **COUNT**--finds out how many cells have values.

d. **MAX**--finds the highest number in a group of values.

- e. **MIN**--finds the lowest number in a group of values.
- f. **STD**--standard deviation (not in all software).
- g. **VAR**--variance (not in all software).

4. **Financial functions**--if this capability is available, the following functions are usually included.
    - a. **PV**--present value
    - b. **NPV**--net present value
    - c. **FV**--future value
    - d. **IRR**--internal rate of return
    - e. **PMT**--required payment per period
5. **Logical functions**--there are some advanced functions available, but they are not listed here. The logical operator IF allows conditional operations.
6. Date and time functions
    - a. **DATE**--displays the current date.
    - b. **TODAY** or **NOW**--displays date and time.

C. **Printing**--all or any portion of a worksheet can be sent to the printer using special printer commands.

1. There is often a special "screen dump" command to make a hard copy of a particular screen display. A report can be designed and stored on a disk for later printing if it is not convenient to print at the time it is saved.
2. If the desired report is too wide for the printer, there are special programs available that can be used with the spreadsheet software. These programs permit a dot matrix printer to print the report sideways on the paper so that it can be as wide as necessary.
3. Some possible print options include control of:
    - a. Top, bottom, left, and right margins.
    - b. Paper length.
    - c. Lines per inch.
    - d. Special codes for printer (varies the print size and style).

e. Headers and footers to be repeated on each page.

f. Borders (certain columns or rows can be repeated on every page).

D. **Macros**--stored command sequences. This feature is available on most, but not all spreadsheet packages.

1. A great deal of work can go into designing a spreadsheet and manipulating the data.

a. Entering the data is usually only a minor part of the effort. If the same spreadsheet is to be run regularly, a template is used, but there still may be many steps required after the new data has been entered.

b. These steps can be saved as a sequence of commands, and given a name.

2. Many people believe that macros are complicated and difficult to use.

a. Many of the handiest ones are quite simple, and are as easy to learn as other commands.

b. The secret is to make a detailed list of the keystrokes that are to be included, before attempting to type them in as a macro.

V. Comparison of spreadsheet packages--several factors should be considered when deciding which spreadsheet program to use.

A. **The hardware available**--while much software is written with versions for different microcomputer groups, most spreadsheet programs are designed to run on specific computers (and those that are compatible).

1. To make comparisons, an easy method is to compare other software with the one that is most popular.

2. The most widely used Apple II spreadsheet is the one included with AppleWorks integrated software.

3. The most popular program for MS-DOS machines is LOTUS 1-2-3, also an integrated package.

B. **Software requirements**--when choosing software, needs should be analyzed, including size requirements and necessary functions. If there is a specific job that the software is being bought to solve, examine the software's capability to handle that problem.

C. **Ease of use**--if the program is time-consuming to learn and cumbersome to use, it may be a more sophisticated and complex program than is needed.

D. **Cost and support**--if the budget will only allow an inexpensive program, be sure it is reliable, and will do the job. Reputable software vendors are responsive to users' problems. Check with others who have used the program.

ACTIVITY 1: TERMINOLOGY

INSTRUCTIONS: Define the following terms.

1. Absolute
2. Address
3. Cell
4. Format
5. Formula
6. Global
7. Label
8. Macro
9. Menu
10. Range
11. Relative
12. Scrolling
13. Template
14. What-if
15. Window

ACTIVITY 2: STRUCTURE OF ELECTRONIC SPREADSHEETS

Project 1

INSTRUCTIONS: Explain the structure of the electronic spreadsheet.

Project 2

INSTRUCTIONS: Using a bookkeeper's worksheet provided by your teacher, label the parts of it as if it were a spreadsheet.

ACTIVITY 3: CAPABILITIES OF ELECTRONIC SPREADSHEETS

Project 1

INSTRUCTIONS: List 10 ways an electronic spreadsheet can be used.

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Project 2

INSTRUCTIONS: Contact two businesses assigned by your teacher that uses spreadsheets to assemble a list of real problems that are being solved with spreadsheets.

ACTIVITY 4: COMPARISON OF SPREADSHEET SOFTWARE

INSTRUCTIONS: **Using the following worksheet and current literature spreadsheet software give the requested information.**

SPREADSHEET SOFTWARE COMPARISON WORKSHEET

Name of the spreadsheet software:

What are the hardware requirements?

1.

2.

3.

4.

5.

Number of rows available ______

Number of columns available ______

Maximum amount of memory that can be used ______

Is graphics capability built-in? ______

Are multiple windows supported? ______

Are adequate learning or tutorial materials included? ______

What other applications (if any) are integrated with the software?

ACTIVITY 4 (Continued)

What other programs can be used for importing or exporting files?

How is the command menu activated?

Where is the command menu displayed?

List the commands available by means of function keys?

What mathematical functions are available?

What logical operators are included?

What printer options are available?

How is on-line help accessed?

Comments on any valuable additional features.

Comment on any important shortcomings.

SECTION III: ELECTRONIC SPREADSHEETS

UNIT II: ELECTRONIC SPREADSHEET APPLICATIONS

UNIT OBJECTIVE: Students will use proper procedures in starting up a spreadsheet program, design and use a template, utilize advanced functions of the software, including macros, print, graph, and save the results.

STUDENT COMPETENCIES: Upon completion of this unit, the student will be able to:

1. Plan a spreadsheet and design a template for it.
2. Enter and manipulate data.
3. Write and use a simple macro.
4. Demonstrate some advanced mathematical functions.
5. Print and graph the results and save the template.

FOCUS: Those who have learned to use an electronic spreadsheet have a valuable skill, but to take full advantage of the power of the software calls for more than entering data into a predesigned worksheet. Those who benefit most from this important tool are those who use it to solve problems of their own. One can go to any level he/she desires, including programming the spreadsheet to carry out commands automatically.

UNIT OVERVIEW

I. Setup procedures

  A. Like most commercial software, spreadsheet programs must be set up for the particular hardware configuration on which it will be used. (This is particularly true for LOTUS 1-2-3, because if the program disk is not set up for the correct monitor, the program will lock up the entire system.) There is usually a special program or routine on the disk for that purpose. If the software has already been installed, or used on the system, this step is not needed.

  B. Starting up the operating system and executing the spreadsheet program by name, will bring up a menu that can be followed.

II. **Design format**--if the work to be done is a new application, the first step is to plan the layout of the data.

  A. Identify the data that is to be used, and determine how many rows and columns will be needed.

  B. By inspecting the data, and anticipating the form of the results, decide what column widths and formats will be needed.

  C. Choose column and row headings to best fit the data and the column sizes chosen.

  D. Type in any titles or comments, and the headings.

  E. Lock in the titles, if desired, and save the program.

  F. The spreadsheet is now ready for data entry. If it later turns out that column sizes or sequencing need improvement, be sure to save the layout again after making changes.

III. **Enter and manipulate data**--sometimes the best procedure is to enter all the data before doing any calculations, copying or moving. The problem itself usually determines what will work the best. Errors should be corrected as soon as they are discovered.

  A. Enter the data into the cells. Work either vertically or horizontally, whichever is easiest for the data being used.

  B. Enter formulas that are to be used to calculate results. Be sure that the cells for the results are correctly formatted.

  C. Copy the formulas to other cells, if the same formula is to be applied to additional rows and/or columns.

  D. Check to see that results are as expected.

IV. **Designing templates**--a template is merely the part of the spreadsheet that is reusable, without the data.

   A. It is actually a model that has the labels and the formulas in place, but has blank cells for the user to place the data.

   B. It should guide the user through the process of entering data and prevent the user from modifying the template's formulas.

   C. The template is protected by hiding the worksheet's calculations from view, and by creating forms that help guide data entry.

   D. Hundreds of complex templates have been designed and saved, and are available free, or at low cost, from user groups, public domain software libraries, or other users. There may not be one to fit every need, but there is probably one that can be adapted.

V. **Using advanced functions**--many spreadsheet users do all their number work on the computer, and never use advanced commands, and may not even be aware of them. Some of these commands, however, are the greatest worksavers of all.

   A. **Advanced mathematical functions**--all of the computer's mathematical capabilities are available to the worksheet formulas, but some functions would be too complex for users to enter. The built-in functions are designed to make it simple to do all the most needed calculations.

   B. There are two kinds of activities in which business users frequently need to use these special mathematical functions.

      1. **Statistics**--when calculating averages, such as average monthly sales or average yearly income, the @AVG function averages a range of cells in one step.

      2. **Standard deviation (@STD), and variance (@VAR)**--measures that determine the significance of differences between results. These are important when analyzing results.

      3. **Financial functions**--many predictions and forecasts are based upon calculating the future value of an investment. The future value function, (@FV) performs the calculations. Other measures, present value (@PV), net present value (@NPV), and internal rate of return (@IRR) can be used to compare the relative value of two or more investments. When borrowing or lending money, the payment amount can be determined based on the term of the loan and the interest rate, using the required payment per period function (@PMT).

4. Other mathematical functions that are sometimes used in business include the exponential function, (@EXP) which is useful in amortization schedules, and the random function (@RAND), which selects random numbers between 0 and 1. These are most often used in simulations, to generate random test data to simulate real life situations. (@RAND is also used in games.)

5. These functions can be used even by those who do not understand the mathematics behind them, as the instructions in the manuals are quite clear.

B. Creating and using macros

1. Consult the software reference manual for exact procedures, but the following represent typical steps.

    a. Determine what steps and commands the macro will execute.

    b. Step through the steps manually, one at a time, carefully writing down each keystroke, as it is pressed, including the Enter key.

    c. For each command that is represented by a non-printable character, such as the backspace, the function keys, and Home key, consult the list in the manual for the code to use. Substitute these codes for the keystrokes on the list.

    d. Choose an unused area of the worksheet to store the macro commands.

    e. Carefully type in each keystroke in correct sequence. This can be done with one command to a cell or several to a cell, but they must be in order and must be in adjacent rows in the same column.

    f. Give a one letter name to the range of cells containing the macro commands. (Only the first cell of the macro must be in the range.)

2. To use the macro, first be sure that all the data and formulas needed have been entered and be sure the pointer is at the correct place to begin the execution of the macro.

3. Enter command mode and hold down the Alt key, followed by the letter of the macro name. If everything has been done correctly, the macro will execute. A macro can be executed one step at a time for testing and checking.

ACTIVITY 1: PLANNING AND DESIGNING A SPREADSHEET TEMPLATE

INSTRUCTIONS: **Plan a spreadsheet and design a template for the following information.**

The Davidson Company requires an expense report at the end of each month. Totals are required for each salesperson's total expenses. Total are also required for all general expenses and transportation expenses. A grand total of all expense incurred is also required. The following is a listing of the salesperson's expenses for the current month.

1. During the week of the 8-12, Mr. Fairfield traveled to Dallas. His general expenses were $475.00, and his transportation expenses were $135.00.
2. During the week of the 12-17, Mrs. Green traveled to Houston. Her general expenses were $576.98, and her transportation expenses were $135.00.
3. During the week of the 1-4, Mr. Carson traveled to Dallas. His general expenses were $375.59, and his transportation expenses were $108.00.
4. During the week of the 20-25, Mrs. Green traveled to Little Rock. Her general expenses were $889.32, and her transportation expenses were $185.00.
5. During the week of the 10-14, Mr. Hooper traveled to Topeka. His general expenses were $365.65, and his transportation expenses were $135.00.
6. During the week of the 13-16, Mrs. Anderson traveled to St. Louis. Her general expenses were $304.76, and her transportation expenses were $195.00.
7. During the week of the 10-14, Mr. Carson traveled to Dallas. His general expenses were $435.43, and his transportation expenses were $108.00.
8. During the week of the 22-26, Mrs. Anderson traveled to San Antonio. Her general expenses were $687.34, and her transportation expenses were $135.00.

ACTIVITY 2: ENTERING AND MANIPULATING DATA

Project 1

INSTRUCTIONS: Using the template and the information in Activity 1, enter and manipulate the data according to the instruction sheet provided by your teacher.

Project 2

INSTRUCTIONS: Give the command for the spreadsheet program that you are using which causes the execution of the following command.

1. Loading the program

2. Call for on screen help

3. Retrieve a template--worksheet

4. Getting around the spreadsheet

   To move cursor:

   - To top-left corner of spreadsheet
   - One column left
   - One column right
   - One row up
   - One row down
   - To beginning of row
   - To end of row
   - To top of column

ACTIVITY 2 (Continued)

To scroll screen up

To scroll screen down

To scroll screen right

To scroll screen left

To a specific cell

To lower-right corner of worksheet

To upper-left corner of screen

To lower-right corner of screen

Between windows

5. Getting out of trouble

6. Entering labels

7. Repeating labels

8. Entering numbers

9. Editing while entering

10. Editing after entering

11. Recalculating the spreadsheet

ACTIVITY 2 (Continued)

12. Saving a worksheet

13. Clearing the worksheet

14. Quitting the program

15. Entering formulas

16. Using cursor pointing

17. Erasing cell contents

18. Setting global formats

19. Formatting a cell or range of cells

20. Changing the width of all columns

21. Changing the width of a single column

22. Changing recalculation

23. Copying

ACTIVITY 2 (Continued)

24. Moving data

25. Inserting rows

26. Deleting rows

27. Inserting columns

28. Deleting columns

29. Using windows

30. Using fixed titles

31. Specifying absolute references

32. Functions

33. Combining files

34. Extracting a range

35. Printing to the disk

ACTIVITY 2 (Continued)

36. Printing formulas

37. Creating a graph

38. Creating a macro

39. Invoking a macro

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ACTIVITY 3: USING MACROS

INSTRUCTIONS: Write and invoke a simple macro call "D" to create column headers which contain the three letter abbreviation of the name of a month.

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ACTIVITY 4: ADVANCED MATHEMATICAL FUNCTIONS

INSTRUCTIONS: Given the following mathematical operations, list the results of each.

1. @ABS(-4)
2. @INT(4.357)
3. @LN(17.634)
4. @LOG(4.56)
5. @SQRT(5)

ACTIVITY 5: PRINTING, GRAPHING AND SAVING

INSTRUCTIONS: Using the following information, enter it into a spreadsheet and construct a pie graph and a bar graph.

Student enrollment:

Freshmen	432
Sophomores	387
Juniors	379
Seniors	365

SECTION IV

DATABASE MANAGEMENT

ESSENTIAL ELEMENT

75.87 (e)(4)

4. **Concepts and skills related to database management. The student will be provided opportunities to:**

   A. **Demonstrate high-level database concepts, procedures, and capabilities; and**

   B. **Apply higher-level capabilities of database management.**

SUGGESTED UNIT LESSON PLAN

SECTION IV: DATABASE MANAGEMENT

UNIT I: CONCEPTS OF DATABASE MANAGEMENT

ESSENTIAL ELEMENT: 75.87 (e)(4)(A)

ALLOCATED TIME: 10 Hours

UNIT OBJECTIVE: Students will describe the capabilities of database management software using appropriate terms, and will show how these capabilities are implemented within a software package. He/she will also contrast types of database structures and features of software.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Use terminology associated with database management systems.
2. Explain the purpose and benefits of databases.
3. List typical capabilities of database management software.
4. Describe three types of database structures.
5. Discuss criteria for comparing software packages.

FOCUS: Almost all organizations maintain a database of some type. Workers who manage or interact with the database, beyond simple data entry, are expected to have an overall understanding of the concepts and organization of the software. Trained employees are expected to be familiar with the common elements that are seen in all DBMS programs.

DOMAINS: Activities and competency tests have been designed to provide learning experiences utilizing the cognitive, psychomotor, or affective domains. Activities and competency tests are coded on the Activity and Competency Test Matrices.

BASIC SKILLS: Activities and competency tests have been designed to reinforce the basic skills of reading, writing, and/or mathematics. Activities and competency tests have been coded on the Activity and Competency Test Matrices.

CONTENT OUTLINE

I. Concepts of database management
  A. Decreasing repetitive work
  B. Increasing accuracy
  C. Eliminating inaccurate data
  D. Increasing efficiency
II. Advantages and disadvantages
  A. Advantages
  B. Disadvantages
III. Applications
  A. Accounting
  B. Agriculture
  C. Construction
  D. Financial
  E. Medical
  F. Real estate
  G. Sports
  H. Miscellaneous
IV. Logical data models
  A. Hierarchical or tree structure
  B. Network or plex
  C. Relational

V. Comparison of database systems
  A. Hierarchical
  B. Network
  C. Relational

VI. Capabilities of databases
  A. Add or enter
  B. Update or edit
  C. Delete
  D. Sort or arrange
  E. Copy
  F. Search or index
  G. Query
  H. Select
  I. Project
  J. Report

VII. Comparison of software packages
  A. Capacity
  B. Input formatting
  C. Report formats
  D. Sorting
  E. Reorganizing
  F. Ease of use

SUGGESTED TEACHER ACTIVITIES

General Teacher Preparation

1. Preview the unit.
2. Review unit objectives.
3. Make instructional analysis.
4. Assess student learning needs.
5. Decide on lesson domain: cognitive, psychomotor, or affective domain.
6. Select instructional materials based on instructional analysis and student learning needs.
7. Select instructional strategies based on lesson content and student learning needs.
8. Prepare lesson plans from the unit lesson.
9. Prepare additional instructional material.
10. Reserve necessary media and equipment.

Teacher Presentation

1. Present student objectives.
2. Establish rapport with students.
3. Review lesson objectives with students.
4. Relate lesson to prior or future learning.
5. When appropriate, encourage student interaction through questioning, discussions, or some other strategy.
6. Emphasize the value/importance of the unit or activity.
7. Allow time for closure of a lesson.

Reteach Activities

1. Identify area(s) of weakness from results of evaluation.
2. Select unit activities not previously used.
3. Use additional resources and/or create materials based on student learning needs.
4. Use a different teaching strategy in reteaching.
5. Retest.

Specific Teaching Activities

1. Become familiar with information management software.
2. Obtain sample formats of management manual examples, electronically-produced management examples, and information software brochures.
3. Prepare transparencies to illustrate the command categories that are common to databases.
4. Select assignments or prepare additional assignments to reinforce work within a database.
5. Develop a list of database examples, including some to which students could relate.
6. Make printouts and/or transparencies of sample databases.
7. Identify reference manual sections that will be useful to the students.
8. Select exercises and drills from resources to complete the section.
9. Duplicate data diskettes with predesigned formats to use for exercises.

Activity 5

Project 1 Gather current literature on database software.

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ACTIVITY MATRIX

Activities	**Domains**			**Basic Skills**		
	Cognitive	**Psycho-motor**	**Affective**	**Reading**	**Writing**	**Math**
1	X				X	
2 Project 1	X				X	
Project 2	X				X	
Project 3	X				X	
3 Project 1	X				X	
Project 2	X				X	
4	X				X	
5 Project 1	X				X	
Project 2	X			X	X	

COMPETENCY TEST MATRIX

Parts	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
1	X			X		
2	X				X	
3	X				X	
4 Project 1	X			X		
Project 2	X				X	
5	X				X	

COMPETENCY TEST

PART I: TERMINOLOGY

INSTRUCTIONS: Write T if the statement is true, F if the statement is false.

______ 1. Databases were developed because handwritten data files are difficult to read.

______ 2. The use of databases instead of individual files reduces the amount of repetitive work.

______ 3. Data in a database are likely to be more accurate than manually processed data.

______ 4. Data in a database are 100% accurate.

______ 5. Once data are keyed into a database, there is nothing else that needs to be done to the data.

______ 6. Data within a database can be sorted alphabetically, numerically, or chronologically, depending on the data.

______ 7. Data in a database may be sorted in more than one field.

______ 8. At the time a record is deleted, it is not physically removed.

______ 9. Once the records have been typed into a database, it is too late to insert more records.

______10. If data have been incorrectly entered, the data can be corrected at any time after the error is discovered.

______11. A database program allows one to find out how many people with the same last name are in a database file.

______12. To query a database means to ask for all the data to be displayed or printed.

______13. A report can be printed containing only data that meet certain specifications.

______14. An attribute is a type of hardware.

______15. Chronological order means in order according to time.

______16. Decrement means an increase in value.

______17. Error-trapping is used as a check against bad data.

______18. An index file is one that relates a key field to a record.

______19. A literal is a type of variable stored in a database.

______20. A network structure resembles a tree.

PART II: PURPOSE OF DATABASE

INSTRUCTIONS: Answer the following questions.

1. Explain the purpose and benefits of a database.

2. List five (5) applications in which a database can be used.

   1.
   2.
   3.
   4.
   5.

PART III: CAPABILITIES OF DATABASE MANAGEMENT SOFTWARE

INSTRUCTIONS: **List and explain five (5) capabilities of database software.**

1.

2.

3.

4.

5.

PART IV: TYPES OF DATABASE STRUCTURES

Project 1

INSTRUCTIONS: Complete the following statements.

1. The most flexible database structure is ____________________.
2. A ____________________ database can access data most quickly.
3. LOTUS 1-2-3 is an example of a ____________________ structure.
4. The ____________________ structure is the least flexible.
5. Data items can have both top-down and bottom-up relationships with a ____________________ structure.
6. The ____________________ structure has a top-down order.
7. The ____________________ structure has access at multiple levels.
8. An individual item in a data record is a ____________________.
9. The ____________________ structure is composed of tables of logically arranged data in rows and columns.
10. In the ____________________ structure, fields must be accessed through a key field in a parent record.

Project 2

INSTRUCTIONS: Describe the structure of the database program that you are working with.

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PART V: CRITERIA FOR COMPARING SOFTWARE PACKAGES

INSTRUCTIONS: List and discuss the criteria used to compare software packages.

ANSWERS TO ACTIVITIES

Activity 1

1. Database management system--software that allows the user to access and manipulate data stored in a database.
2. Relation--a connection established between multiple files within a database.
3. Attribute--a descriptive characteristic of hardware, such as the monitor.
4. Key field--a field that can be used for sorting or indexing.
5. Default--the automatic value of an option if the user does not specify a choice.
6. Field--an individual data item in a record.
7. File--a collection of related information. A set of data records.
8. Record--a group of related fields, treated as a unit.
9. Truncate--to drop or cut off characters in a field to make it a certain length.
10. Encrypt--to encode data so that it is unreadable by unauthorized persons.
11. Index--a file that relates a key field to a record number.
12. Schema--a map of the logical structure of a database.
13. Query--a request to the database for specific data.
14. Logical operator--an operator such as AND or OR, that is used to relate logical expressions.
15. Prompt--a symbol or word to inform the user that a response is needed.

Activity 2

Project 1

The objectives around which databases were designed are decreasing repetitive work and increasing accuracy and efficiency of data management.

Project 2

Any of the following or others:

1. Accounting: payroll, invoicing, general ledger, accounts payable, and accounts receivable.
2. Agriculture: farm accounting, cattle management, dairy management, and acreage management.
3. Construction: estimating, job costing, bid management, and project management.
4. Financial: inventory control, lease management, financial reports, and cash management.
5. Medical: dental and doctor office, hospital administration, nursing home management, and pharmacy management.
6. Real estate: property management, mobile park management, property listings, and escrow accounting.
7. Sports: baseball, football, basketball statistics programs, racehorse handicaps, and drafting.
8. Miscellaneous: personnel management system, travel agency management, food service management, and scientific computations.

Project 3 Evaluated to the satisfaction of the instructor.

Activity 3

Project 1 Any five (5) of the following:

1. Add or enter--is used to load data into a file through entries to a format or schema.
2. Update or edit--is used to change records that already are part of a file.
3. Delete--obsolete records can be removed from the database.
4. Sort or arrange--arranges records within a single file in sequence.
5. Copy--files or records in a database can be copied to another file or to another place within the database, if desired.
6. Search or index--creates an index used to find records within a file.
7. Query--if a particular item of information is needed, such as the balance due on a certain account, the key field (the account number) could be entered and the data relevant to that account displayed on the screen.
8. Select--copies complete records or rows into a working file, leaving the existing file undisturbed.
9. Project--is similar to select, except that selection and copying are completed for columns of data items, rather than rows.
10. Report--whatever information is needed after being selected and rearranged to suit the purpose, is then formatted into a report to send off to interested parties.

Project 2 Evaluated to the satisfaction of the instructor.

Activity 4

1. Hierarchical or tree structure--data is stored something like a family tree in a top-down order, according to established relationships. All access begins at top-level items and precedes downward. Fields must be accessed through a key field in a "parent" record.

2. Network or plex--uses a structure similar to that of the hierarchical mode, except that access is possible at multiple levels. Data are accessed through key fields, but there are additional pathways, instead of a single one, to access certain data. Data items can have both top-down and bottom-up relationships with a network structure.

3. Relational--a traditional-type file that consists of records and fields. This type of database is composed of tables of data, logically arranged in rows and columns. There can be several of these tables within a database.

Activity 5

Project 1

1. Capacity
2. Input formatting
3. Report formats
4. Sorting
5. Reorganizing
6. Ease of use

Project 2 Recommendation will vary according to the software used. Evaluated to the satisfaction of the instructor.

COMPETENCY TEST ANSWERS

Part I

1.	F	6.	T	11.	T	16.	F
2.	T	7.	T	12.	F	17.	T
3.	T	8.	T	13.	T	18.	T
4.	F	9.	F	14.	F	19.	F
5.	F	10.	T	15.	T	20.	T

Part II

1. The objectives which databases were designed for are decreasing repetitive work and increasing accuracy and efficiency of data management.

2. Any five of the following or others:

    1. Accounting: payroll, invoicing, general ledger, accounts payable, and accounts receivable.
    2. Agriculture: farm accounting, cattle management, dairy management, and acreage management.
    3. Construction: estimating, job costing, bid management, and project management.
    4. Financial: inventory control, lease management, financial reports, and cash management.
    5. Medical: dental and doctor office, hospital administration, nursing home management, and pharmacy management.
    6. Real estate: property management, mobile park management, property listings, and escrow accounting.
    7. Sports: baseball, football, basketball statistics programs, racehorse handicaps, and drafting.

8. Miscellaneous: personnel management system, travel agency management, food service management, and scientific computations.

Part III Any five of the following:

1. Add or enter--is used to load data into a file through entries to a format or schemas.
2. Update or edit--is used to change records that already are part of a file.
3. Delete--obsolete records can be removed from the database.
4. Sort or arrange--arranges records within a single file in sequence.
5. Copy--files or records in a database can be copied to another file or to another place within the database, if desired.
6. Search or index--creates an index used to find records within a file.
7. Query--if a particular item of information is needed, such as the balance due on a certain account, the key field (the account number) could be entered and the data relevant to that account displayed on the screen.
8. Select--copies complete records or rows into a working file, leaving the existing file undisturbed.
9. Project--is similar to select, except that selection and copying are completed for columns of data items, rather than rows.
10. Report--whatever information is needed after being selected and rearranged to suit the purpose, is then formatted into a report to send off to interested parties.

Part IV

Project 1

1. Relational
2. Hierarchical
3. Relational
4. Hierarchical
5. Network
6. Hierarchical
7. Network
8. Field
9. Relational
10. Hierarchical

Project 2 Evaluated to the satisfaction of the instructor.

Part V Evaluated to the satisfaction of the instructor.

COMPETENCY CHECKLIST

ESSENTIAL ELEMENT: 75.87(e)(4)(B)

The students will be provided opportunities to apply higher level capabilities of database management.

OBJECTIVE: Students will create and set-up a database, enter data, sort and search the database, and design and print summaries and reports.	**MASTERY**	**NON-MASTERY**
1. Use terminology associated with database management systems.		
2. Explain the purpose and benefits of databases.		
3. List typical capabilities of database management software.		
4. Describe three types of database structures.		
5. Discuss criteria for comparing software packages.		

STUDENT NAME ______________________________

SUGGESTED UNIT LESSON PLAN

SECTION IV: DATABASE MANAGEMENT

UNIT II: DATABASE MANAGEMENT APPLICATIONS

ESSENTIAL ELEMENT: 75.87 (e)(4)(B)

ALLOCATED TIME: 15 Hours

UNIT OBJECTIVE: Students will create and set up a database, enter data, sort and search the database, and design and print summaries and reports.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Create a database.
2. Design and edit input and report forms.
3. Enter and manipulate data.
4. Query the database.
5. Use selection criteria for printing reports.

FOCUS: The difference between classroom work and production work is often just a matter of practice and the ability to work independently (or with a minimum of supervision). When competing for a job, this difference could determine which applicant is accepted. Some DBMS programs have become so popular that persons trained in their use are in high demand in many locales. Even training with an infrequently used program is valuable because it is relatively easy to learn another package after achieving proficiency with one.

DOMAINS: Activities and competency tests have been designed to provide learning experiences utilizing the cognitive, psychomotor, or affective domains. Activities and competency tests are coded on the Activity and Competency Test Matrices.

BASIC SKILLS: Activities and competency tests have been designed to reinforce the basic skills of reading, writing, and/or mathematics. Activities and competency tests have been coded on the Activity and Competency Test Matrices.

CONTENT OUTLINE

I. Creating a database--system specifications

II. Forms design

   A. Input forms

   B. Report forms

   C. Field formatting

III. Setup procedures

IV. Forms manipulating

V. Other features

VI. Entering/manipulating data

   A. Design of input form

   B. Changing the input form

VII. Searches

VIII. Creating report summaries

IX Printing

X. Importation of data

SUGGESTED TEACHER ACTIVITIES

General Teacher Preparation

1. Preview the unit.
2. Review unit objectives.
3. Make instructional analysis.
4. Assess student learning needs.
5. Decide on lesson domain: cognitive, psychomotor, or affective domain.
6. Select instructional materials based on instructional analysis and student learning needs.
7. Select instructional strategies based on lesson content and student learning needs.
8. Prepare lesson plans from the unit lesson.
9. Prepare additional instructional material.
10. Reserve necessary media and equipment.

Teacher Presentation

1. Present student objectives.
2. Establish rapport with students.
3. Review lesson objectives with students.
4. Relate lesson to prior or future learning.
5. When appropriate, encourage student interaction through questioning, discussions, or some other strategy.
6. Emphasize the value/importance of the unit or activity.
7. Allow time for closure of a lesson.

Reteach Activities

1. Identify area(s) of weakness from results of evaluation.
2. Select unit activities not previously used.
3. Use additional resources and/or create materials based on student learning needs.
4. Use a different teaching strategy in reteaching.
5. Retest.

Specific Teaching Activities

1. Become familiar with information management software.
2. Obtain sample formats of management manual examples, electronically-produced management examples, and information software brochures.
3. Prepare transparencies to illustrate the command categories that are common to databases.
4. Select assignments or prepare additional assignments to reinforce work within a database.
5. Develop a list of database examples, including some to which students could relate.
6. Make printouts and/or transparencies of sample databases.
7. Identify reference manual sections that will be useful to the students.
8. Select exercises and drills from resources to complete the section.
9. Duplicate data diskettes with predesigned formats to use for exercises.
10. The competency test covers the entire unit. This test is a hand-on activity.

Activity 1	Gather information about schedules.
Activity 2	
Project 1	Assign groups and gather ideas for databases.
Project 2	Prerequisite--Project 1
Activity 3	Prerequisite--Activity 1
Activity 4	Prerequisites--Activity 1 and Activity 3
Activity 5	Prerequisite--Activity 1 and Activity 3

ACTIVITY MATRIX

Activities	**Domains**			**Basic Skills**		
	Cognitive	**Psycho-motor**	**Affective**	**Reading**	**Writing**	**Math**
1	X	X			X	
2 Project 1	X	X	X	X	X	
Project 2	X	X			X	
3	X	X			X	
4	X	X		X	X	
5	X	X		X		

COMPETENCY TEST MATRIX

Parts	**Domains**			**Basic Skills**		
	Cognitive	**Psycho-motor**	**Affective**	**Reading**	**Writing**	**Math**
All	X	X		X	X	X

COMPETENCY TEST

INSTRUCTIONS: Using the accompanying data, complete the following steps.

1. Design an input form for entering the data. Have the design approved before proceeding.

2. Create the database.

3. Enter the data.

4. Search for the record of a particular customer.

5. Update the database according to instructions.

6. Sort the list by zip code.

7. Print mailing labels in zip code order, making a label for each customer with an outstanding balance of greater than $5.00.

8. Print an alphabetized report of names, account numbers, and balances.

COMPETENCY TEST DATA

Friendly Department Store Credit Customers

Ann Marie Johnson	1845 Fort Wayne Dr.	Keyland, FL 32145	807326001	125.56
Robert S. Scheely	2401 N. Nineteenth	Keyland, FL 32148	574830112	316.75
J. Francis Moran	P.O. Box 230	Brooks, FL 32087	594237479	0.00
Mrs. Karl Kuhn	433 Box Elder Ct.	Keyland, FL 32129	203068843	45.65
Janice Barlow	1618 Pinewood, Apt. 211	Maynard, FL 32205	482938911	9.58
Lupe Reyes	7402 S. Eleventh	Keyland, FL 32156	200304136	0.49
Jason D. McCook	Box 7211	Maynard, FL 32205	831093225	1,006.25
Eldon Schultz	212 Grand Key	Keyland, FL 32134	384729836	83.14
Ms. Eileen Kinder	4405 Palmfield	Keyland, FL 32145	234867433	875.20
Kelly Farrington	1234 Pinewood, #133A	Maynard, FL 32205	048429374	119.65
Jesse J. Cruz	2938 Oleander Cr.	Keyland, FL 32147	144327887	64.83
Jackson Andrews	732 W. Dayport St.	Keyland, FL 32184	373738901	91.98
Richard C. Lopez	P.O. Box 31141	Brooks, FL 32087	270127637	210.77
Anthony W. Williams	4001 Catalina Dr.	Keyland, FL 32166	284983289	19.66
Linda Jenkins	1647 Dade Rd., #31	Keyland, FL 32105	576785300	107.10
Dr. Paul Edwards	Curtis Bldg., #1025	Keyland, FL 32116	102569710	1,438.74
Alex Gregory	124 Wilson Hall	Brooks, FL 32087	547380118	2.46

The following transactions have occurred to update the file:

1. Account number 234867433 has a new balance of $47.60.
2. Janice Barlow has moved to Apt. 238 at the same address.
3. Account number 284983289 has reduced his balance to $4.66.
4. Mrs. Karl Kuhn now has her account listed under Marie S. Kuhn.
5. Linda Jenkins has a new balance of $154.65.
6. Account number 102569710 has a new balance of 0.

The following new accounts have been opened:

Angela Lisa Torres
4230 Garrison Ave.
Maynard, FL 32206
283894821
28.16

Christopher W. Gustafson
834 Swampwoods
Keyland, FL 32178
493765812
97.82

The following account has been closed:

Ms. Eileen Kinder 234867433

ANSWERS TO ACTIVITIES

Activity 1 Evaluated to the satisfaction of the instructor.

Activity 2

Projects 1-2 Evaluated to the satisfaction of the instructor.

Activity 3 Evaluated to the satisfaction of the instructor.

Activity 4

Project 1

1.	Computer Math	Reed	315
2.	Tennis	Thomas	Gym

3. No

4. Donna Cate
Mike Kowack
Amy Noles
Chris Taller
Todd West

5. Brannon Bell
Mike Hill
Bryan King
Chris Taller
Jim Toddler
Todd West

Activity 5 Evaluated to the satisfaction of the instructor. However, the information on the report should contain the following entries.

Report 1

Bell Brannon	11	Neer
Bell Tommy	9	Neer
Cate Donna	12	Neer
Coffee Chanda	11	Neer
Davis Jared	10	Neer
Gile Jimmie	12	French
Hill Mike	9	French
Hull Kim	10	French
Jones Wendy	10	French
King Bryan	11	French
Kowack Mike	12	French
Noles Amy	12	Brown
Norman Jenny	9	Brown
Rowe Jeff	9	Brown
Steel Justin	10	Brown
Taller Chris	12	Hunt
Toddler Jim	9	Hunt
West Todd	12	Hunt

Report 2

Donna Cate
Jimmie Gile
Mike Kowack
Amy Noles
Chris Taller

Report 3

Taller Chris
West Todd

Report 4

Student: Jeff Rowe
Advisor's #: 303
Grade: 9
Counselor: Brown
Schedule:

0	None		
1	English I	Fields	201
2	Phy Science	Meaker	102
3	Tx History	Cotts	411
4	Algebra I	Roberts	313
5	Choir	Talley	513
6	Woodworking	Howl	110

Report 5

Cate Donna
Gile Jimmie
Kowack Mike
Noles Amy
Taller Chris
West Todd

COMPETENCY TEST ANSWERS

Evaluated to the satisfaction of the instructor.

COMPETENCY CHECKLIST

ESSENTIAL ELEMENT: 75.87(e)(4)(A)

The students will be provided opportunities to demonstrate basic database concepts, procedures, and capabilities.

OBJECTIVE:	**Students will create and set up a database, enter data, sort and search the database, and design and print summaries and reports.**	**MASTERY**	**NON-MASTERY**
1.	**Create a database.**	______	______
2.	**Design and edit input and report forms.**	______	______
3.	**Enter and manipulate data.**	______	______
4.	**Query the database.**	______	______
5.	**Use selection criteria for printing reports.**	______	______
		______	______
		______	______

STUDENT NAME ________________________________

SECTION IV: DATABASE MANAGEMENT

UNIT I: CONCEPTS OF DATABASE MANAGEMENT

UNIT OBJECTIVE: Students will describe the capabilities of database management software using appropriate terms and will show how these capabilities are implemented within a software package. He/she will also contrast types of database structures and features of software.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Use terminology associated with database management systems.
2. Explain the purpose and benefits of databases.
3. List typical capabilities of database management software.
4. Describe three types of database structures.
5. Discuss criteria for comparing software packages.

FOCUS: Almost all organizations maintain a database of some type. Workers who manage or interact with the database, beyond simple data entry, are expected to have an overall understanding of the concepts and organization of the software. Trained employees are expected to be familiar with the common elements that are seen in all DBMS programs.

TERMINOLOGY

Attribute	A descriptive characteristic of hardware, such as the monitor.
Database management system (DBMS)	Software that allows the user to access and manipulate data stored in a database.
Default	The automatic value of an option if the user does not specify a choice.
Encrypt	To encode data so that it is unreadable by unauthorized persons.
Field	An individuals data item in a record.
File	A collection of related information. A set of data records.
Index	A file that relates a key field to a record number.
Key field	A field that can be used for sorting or indexing.
Logical operator	An operator such as AND or OR, that is used to related logical expressions.
Network structure	Uses a structure similar to that of the hiearchial structure, except that access is possible at multiple levels also known as a plex structure.
Prompt	A symbol or word to inform the user that a response is needed.
Query	A request to the database for specific data.
Record	A group of related fields, treated as a unit.
Relation	A connection established between multiple files within a database.
Relational structure	A traditional-type file that consist of records and field.
Schema	A map of the logical structure of a database.
Truncate	Dropping or cutting off characters in a field to make it a certain length.

UNIT OVERVIEW

I. Concepts of database management--the objectives around which databases were designed are decreasing repetitive work and increasing accuracy and efficiency of data management.

A. Decreasing repetitive work--the idea is that data, once entered, need not be entered again. For example, an employee's birthdate is needed for several different reports by different departments within the company, each department can access the database rather than obtain the information separately.

B. Increasing accuracy--if a number is typed twenty times by twenty different people, chances are that one or more will type it incorrectly, particularly when large quantities of data are being dealt with. Humans are subject to many factors, such as fatigue, which increases the chances of error.

C. By entering data just once into a database, and verifying its accuracy immediately, almost all cases of inaccurate data can be eliminated. Of course, if the data isn't verified, and it's wrong, the consequences can be much more serious.

D. Increasing efficiency--because the data is entered only once, and then processed at computer speeds, results are obtained much faster and with fewer intermediate steps.

II. Advantages and disadvantages of database management systems

A. Advantages--these are in addition to those mentioned as the objectives of database.

1. If new needs arise, the data is already there.
2. Updating of a record need only be done once.
3. All occurrences of a record can be deleted at one time.
4. Managed correctly, the system is reliable.
5. Multiple users can work with the database from different locations.
6. Integrated files allow an overview of the user's business and improve access to data.
7. Having the data in a centralized location allows better security.

B. Disadvantages

1. Errors, if not corrected, are perpetuated.
2. The owner of that data can lose control over it.
3. Only one user can access a file (for change) at one time.
4. Privacy can be compromised.

III. Applications--typical database management applications include:

A. Accounting: payroll, invoicing, general ledger, accounts payable, and accounts receivable.

B. Agriculture: farm accounting, cattle management, dairy management, and acreage management.

C. Construction: estimating, job costing, bid management, and project management.

D. Financial: inventory control, lease management, financial reports, and cash management.

E. Medical: dental and doctor office, hospital administration, nursing home management, and pharmacy management.

F. Real estate: property management, mobile park management, property listings, and escrow accounting.

G. Sports: baseball, football, basketball statistics programs, racehorse handicaps, and drafting.

H. Miscellaneous: personal management system, travel agency management, food service management, scientific computations, and many more applications.

IV. Data logical models--database management systems, the programs through which users communicate with the databases, are complex and sometimes expensive. Without these programs, the data would not be convenient to access. DBMS programs are of three structural types.

A. **Hierarchical or tree structure**--data is stored something like a family tree in a top-down order, according to established relationships.

1. All access begins at top-level items and proceeds downward. Fields must be accessed through a key field in a "parent" record.

2. For example, if a business is organized by department, the only way to look at the record of an employee in a department is through the department parent record. The key field might be "employee name." Each employee record might, in turn, be a parent to another record, which could be accessed through the name as the key field.

B. Network or plex--uses a structure similar to that of the hierarchical structure, except that access is possible at multiple levels.

1. Data is accessed through key fields, but there are additional pathways, instead of a single one, to access certain data.

2. Data items can have both top-down and bottom-up relationships with a network structure.

3. For example, a person could be accessed using a social security number as a key, in addition to the department number.

C. Relational--this is a traditional-type file that consists of records and fields.

1. This type of database is composed of tables of data, logically arranged in rows and columns. There can be several of these tables within a database.

2. These tables are each built separately, but can have fields in common. The common fields can be used to relate data from one file to that in another so that a report could be made up of data from two or more files.

3. Some software (examples are AppleWorks and LOTUS 1-2-3) use a relational structure and provide excellent speed. Because they can only operate while residing entirely in memory, the size of the database is limited by the amount of main memory.

V. Comparison of database systems--each type has advantages and disadvantages.

A. Hierarchical

1. Advantage--fastest to access data.

2. Disadvantages--least flexible, limited ability to sort and rearrange data.

B. Network

1. Advantages--more flexible than hierarchical, some relationships can be made.

2. Disadvantage--slower access than a hierarchical database.

C. Relational

1. Advantages--most flexible, easy to adapt to new uses, more relationships possible.

2. Disadvantage--slowest access.

VI. Capabilities of databases--much more can be done than merely enter data, store it, and then print it out later. The programs called Database Management Systems (DBMS) provide numerous functions and ways to manipulate the data.

A. **Add or enter**--is used to load data into a file through entries to a format or schemes. Some databases do not permit adding more records. Indeed, appending data to a file is one of the most frequent activities.

B. **Update or edit**--is used to change records that already are part of a file. Sometimes records are to remain in the database, but part of the information has changed (a new address or phone number, for example). The new information is entered and replaces the old.

C. **Delete**--obsolete records can be removed from the database. When the command is given to remove a record, it is not physically erased, but its space is made available for new data and its record number is reassigned. Periodically, the whole file can be recopied. At that time the deleted files are actually erased.

D. **Sort or arrange**--arranges records within a single file in sequence. The data that is entered usually remains in the same order once it is stored. For a report, the order of the data to be printed can be organized in any desired order, sequenced, and grouped by two or more fields (alphabetically, within a division, for example). Name would be the secondary sort key and decision would be the primary. To actually change the way the data is sorted, the data would be recopied to the disk as another file, and data would not have to be retyped.

E. **Copy**--files or records in a database can be copied to another file or to another place within the database, if desired.

F. **Search or index**--this function creates an index used to find records within a file. Using whatever keys are available, the database can be searched to bring up one or all occurrences of specified data. In this way, for example, one could find if there are persons who live in a certain zip code, or if there is merchandise with an expiration date before the current month.

G. **Query**--if a particular item of information is needed, such as the balance due on a certain account, the key field (the account number) could be entered and the data relevant to that account displayed on the screen.

H. **Select**--copies complete records or rows into a working file, leaving the existing field undisturbed. The database may contain many thousands of records, but if we are only interested in those for people who have type O blood and are between the ages 18 and 65, for example, we can select for those criteria without having to read every record.

I. **Project**--is similar to select, except that selection and copying are completed for columns of data items, rather than rows.

J. **Report**--whatever information is needed after being selected and rearranged to suit the purpose is then formatted into a report to send off to interested parties.

VII. Comparison of software packages--while all packages have the same basic purposes, there is a wide difference in the way they are implemented. Several factors can be considered.

A. Capacity

1. Maximum number of records.
2. Maximum number of fields per record.
3. Maximum size of a record.
4. Total capacity of database in bytes.
5. Will it support multiple disk files?

B. Input formatting

1. Is there a separate screen for entering records?
2. Can the input screen be designed by the user?
3. Ease of editing.
4. Can fields be duplicated from one record to the next?

C. Report formats

1. Can mailing labels be duplicated from one record to the next?
2. Can a page be printed for each record?
3. Maximum report size.
4. Limitations on arrangement of data.

D. Sorting

  1. Limitations on fields that can be used.
  2. How many levels are allowed?

E. Reorganizing

  1. Can new fields be added?
  2. Can field sizes be changed?
  3. Can indexes be added?

F. Ease of use

  1. Help subsystem.
  2. Adequacy of manuals.
  3. Menus.

ACTIVITY 1: TERMINOLOGY

INSTRUCTIONS: Define the following database management terms.

1. Database management system
2. Relation
3. Attribute
4. Key field
5. Default
6. Field
7. File
8. Record
9. Truncate
10. Encrypt
11. Index
12. Schema
13. Query
14. Logical operator
15. Prompt

ACTIVITY 2: PURPOSE AND BENEFITS OF DATABASES

Project 1

INSTRUCTIONS: **Explain the concepts of database management.**

Project 2

INSTRUCTIONS: **List eight applications for database management.**

1.
2.
3.
4.
5.
6.
7.
8.

ACTIVITY 2 (Continued)

Project 3

INSTRUCTIONS: Contact two business users and/or others in order to assemble a list of real problems that are being solved with database management. Be sure to check the list and record what businesses are being contacted. This will prevent several students from contacting the same business.

ACTIVITY 3: CAPABILITIES OF DATABASE MANAGEMENT SOFTWARE

Project 1

INSTRUCTIONS: **List and explain five (5) capabilities of a database management software package.**

1.

2.

3.

4.

5.

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ACTIVITY 3 (Continued)

Project 2

INSTRUCTIONS: Explain how each of the following may be achieved using your software package.

1. Adding or appending data

2. Deleting a record

3. Updating record

4. Copying or duplicating data

5. Searching a database

6. Querying a database

7. Selecting records

8. Reporting

ACTIVITY 4: DATABASE STRUCTURES

INSTRUCTIONS: Describe three types of database structures.

1.

2.

3.

ACTIVITY 5: COMPARING DATABASE SOFTWARE

Project 1

INSTRUCTIONS: List the six (6) criteria for comparing database software packages.

1.

2.

3.

4.

5.

6.

Project 2

INSTRUCTIONS: Using current literature and the criteria for comparing database management software packages, select a database package and write a recommendation for that package.

SECTION IV: DATABASE MANAGEMENT

UNIT II: DATABASE MANAGEMENT APPLICATIONS

UNIT OBJECTIVE: Students will create and set up a database, enter data, sort and search the database, and design and print summaries and reports.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Create a database.
2. Design and edit input and report forms.
3. Enter and manipulate data.
4. Query the database.
5. Use selection criteria for printing reports.

FOCUS: The difference between classroom work and production work is often just a matter of practice and the ability to work independently (or with a minimum of supervision). When competing for a job, this difference could determine which applicant is accepted. Some DBMS programs have become so popular that persons trained in their use are in high demand in many locales. Even training with an infrequently used program is valuable because it is relatively easy to learn another package after achieving proficiency with one.

UNIT OVERVIEW

I. Creating a database

   A. System specifications are designed to guide in creating a database that will be a functional information system. Elements of the system specifications include the following.

      1. **Problem definition**--is a description of results to be attained. The description should be complete enough to cover all expectations.

      2. **System flow description**--provides a simple system flowchart as a basis for translating the definition statement into a series of events and elements that provide the computer solution.

      3. **Data structure definition**--identifies each field name, data type, and the number of characters to be included in all the fields that make up individual records.

      4. **Input description**--examines documents that will contain source data. The best way to specify input is to work with copies or layouts of all source documents.

      5. **Processing description**--in simple terms, the user should list the processing functions (calculations) that will be applied to files or input records to produce either updated files or output.

      6. **Output description**--depicts formats for presenting information on output documents. Reports and other output can be displayed on screen, or printed on a printer.

      7. **Test data**--a set of data to be processed as a means of determining whether the system will do the job for which it is intended. The test data should contain both valid and erroneous or unacceptable items. If the test data set is designed properly, the valid transactions will test a system to its full capabilities and the invalid items will ensure that the system can deal with entries that require rejection.

II. Forms design

   A. **Input forms**--the form should be designed with the objective of making data entry as smooth and easy as possible. Some considerations are as follows.

      1. **Source documents**--data to be keyed in (usually on paper). If there has been good planning, these source documents are well arranged and will be easy for a data entry clerk to enter. The screen input form should, if possible, follow the same order as the source document to minimize eye movements and searching.

2. **Logical groupings--**it is easier to enter data if related fields are continuous on the form. Once again, smooth movements from one field to the next lead to faster and more accurate data entry.

3. **Spacing--**the screen should be well balanced, not crowded or cluttered. Leave enough space between fields for good visibility, but do not spread them out unnecessarily. The appearance should be as pleasing as possible for the persons who must look at it for long periods of time.

4. **Prompts--**the words and other characters displayed on the screen should clearly indicate what data is expected, but should be brief. Use consistent abbreviations and punctuation.

5. The software being used controls what options are available to the designer. Some packages give complete freedom of screen design, others give very little. The database portion of LOTUS 1-2-3 requires all data to be entered in spreadsheet format.

B. **Report forms--**most reports are classified as either labels or lists.

   1. **Labels--**a form that is designed to print data from an individual record.

      a. A label can be a single line of print or many lines.

      b. Many programs also allow the user to specify several labels to be printed side by side.

      c. The arrangement of data on the labels is entirely up to the user.

   2. **Lists--**also called page format, this form consists of headings at the top of the page followed by a print line for each record to be included.

      a. Fields are selected and arranged by the user.

      b. There are numerous options such as page length and width, printing of page numbers, and line spacing.

C. **Field formatting--**at the time some fields are named during input design, information about the fields must also be given.

   1. Data can be classified into several types: alphanumeric, and several numeric options, such as dollar and cents, percentage, fixed decimal, and date.

   2. The maximum and minimum field length and whether a field may be left blank are also specified.

III. **Setup procedures**--starting up a new database is usually accomplished through menu commands.

   A. The first job is to follow the instructions for creating the input form that has been designed. (Output forms can be created at any time.) Once the form is complete, the program is ready for data entry.

   B. During subsequent sessions, the first step is to select the database by name, and then follow the menu to bring up the input form or call for other activities. The program takes care of all record keeping, and always knows how many records have been entered.

IV. **Forms manipulation**--the program, the data, the paper size, and the printer all play a part in information management applications, and they must be coordinated.

   A. It is common to use special forms with database reports and particularly with label printing.

   B. Single width labels are referred to as "one up," and quadruple width labels as "four up." When labels are printed, the page length must be set to agree with the label size. When using page format, the paper can be of any size, including longer and wider than the default size.

V. **Other features**--after a database has been created, there are a number of features that may be available, depending on the software used.

   A. Data can be edited or appended; the user can view the structure of the database; report forms can be created; or one can scroll through the data, or get on-line help.

   B. Some programs permit a limited amount of calculation, such as summing a numeric field.

VI. **Entering/manipulating data**--entry is accomplished one record at a time, using an input form. Some software saves each record on a disk as soon as it is entered. Other programs do not save any records until the user terminates the entry session. Any field of a record can be edited while the record remains on the screen.

   A. The design of the input form determines what data can be entered into a field. If a field has been identified as a date, then characters which cannot be part of a date will not be accepted.

      1. Error traps are built in. If the user attempts to type invalid data, a message will be displayed.

      2. This feature cannot catch all types of errors, but can catch errors where the data is out of range or of the wrong type.

      3. Data will not be accepted if it is longer than the field. Most programs display an error message, others will truncate.

B. Once data has been entered, most databases will not allow changing the input form. If changes must be made (for example, to expand a field), a new database can be created, and the records copied from the old database to the new.

VII. **Searches**--searching for specific records is accomplished through commands such as Find, Seek, or Locate.

A. The general procedure is to list the criteria that will identify the desired record(s) as part of the command. Three or even more criteria may be listed. A search criterion can be exact (Name 'Mickey Mouse'), or a range (Zip-code > 75000). If there are multiple criteria, they are joined with the logical operators, AND, OR, or NOT.

B. The search can stop with the first record that meets the criteria, or continue searching for all occurrences.

VIII. **Creating report summaries**--an output form is used for a summary.

A. Any number of output forms can be designed for the same database. They are stored by name on the disk. If a new report is requested, a new report can be designed.

B. Only the desired fields need be included on the form. The data records for the report are then selected by searching, unless all records are to be printed.

IX. **Printing**--select Print from the menu.

A. Printer options may be selected earlier and saved with the form.

B. Enter the name of the file to be printed, mount the correct forms on the printer, adjust the top of the form, and enter the command to commence printing.

X. Some software permits data from other programs to be imported into the database.

A. The techniques vary, but in general, the records of the receiving file should be designed with the same fields and order, as those of the sending file.

B. Data can also be exported.

C. The reference manual or menu options usually list the names of programs from which data can be imported.

D. Unless the program being used specifically lists the other program for import or export, the results are unpredictable.

ACTIVITY 1: CREATING A DATABASE

INSTRUCTIONS: **Plan and create a database for student schedules. The input form should look like the one below.**

STUDENT SCHEDULE

Student: ______________ Advisor's #:__________________

Grade:________________ Counselor:___________________

PERIOD	COURSE	TEACHER	ROOM #
0			
1			
2			
3			
4			
5			
6			

ACTIVITY 2: DESIGNING A DATABASE

Project 1

INSTRUCTIONS: **Work in groups to design a useful information management system. Each group will need to follow the seven (7) system specifications.**

1) Write a problem definition.
2) Draw a simple system flowchart.
3) List the data structures.
4) Describe and/or develop input forms.
5) Write out the processing needed.
6) Describe and/or develop one (1) screen report and three (3) printed reports (output).
7) Develop test data.

Project 2

INSTRUCTIONS: **Enter data into the database your group developed in Project 1.**

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ACTIVITY 3: ENTER AND MANIPULATE DATA

INSTRUCTIONS: **Enter the following data in the database developed in Activity 2, Project 1.**

STUDENT: TODD WEST
ADVISOR'S #: 218
GRADE: 12
COUNSELOR: HUNT
SCHEDULE:

0	NONE		
1	GOVERNMENT	ROGERS	410
2	ENGLISH IV	HARDEN	210
3	COMP APPL	JONES	111
4	BUS MANG	WALKER	211
5	TENNIS	THOMAS	GYM
6	STUDY HALL	KILE	500

STUDENT: CHRIS TALLER
ADVISOR'S #: 218
GRADE: 12
COUNSELOR: HUNT
SCHEDULE:

0	GOVERNMENT	ROGERS	410
1	ADV DRAFTING	HOOPER	108
2	ENGLISH IV	HARDEN	210
3	COMP APPL	JONES	111
4	BUS MANG	WALKER	211
5	ARCH DRAFTING	HOOPER	108
6	STUDY HALL	KILE	500

STUDENT: CHANDA COFFEE
ADVISOR'S #: 112
GRADE: 11
COUNSELOR: NEER
SCHEDULE:

0	NONE		
1	WORLD HISTORY	DAWSON	412
2	ENGLISH III	ROSS	214
3	ALGEBRA II	ROSEN	314
4	TYPING	BELL	212
5	STUDY HALL	KILE	500
6	TRACK	MEAKER	GYM

ACTIVITY 3 (Continued)

STUDENT: JIMMIE GILE
ADVISOR'S #: 216
GRADE: 12
COUNSELOR: FRENCH
SCHEDULE:

0	GOVERNMENT	ROGERS	410
1	ENGLISH IV	HARDEN	210
2	CHEMISTRY	HONAKER	106
3	COMPUTER MATH	REED	315
4	BUS MANG	WALKER	211
5	STUDY HALL	KILE	500
6	TRACK	HARRIS	GYM

STUDENT: BRYAN KING
ADVISOR'S #: 108
GRADE: 11
COUNSELOR: FRENCH
SCHEDULE:

0	NONE		
1	WORLD HISTORY	DAWSON	412
2	ENGLISH III	BASTON	202
3	COMPUTER MATH	REED	315
4	TYPING	BELL	212
5	BIOLOGY	HOWL	101
6	STUDY HALL	KILE	500

STUDENT: BRANNON BELL
ADVISOR'S #: 112
GRADE: 11
COUNSELOR: NEER
SCHEDULE:

0	NONE		
1	FOOTBALL	HUEY	GYM
2	ALGEBRA	ROSEN	314
3	WORLD HISTORY	DAWSON	412
4	COMPUTER MATH	REED	315
5	ARCH DRAFTING	HOOPER	108
6	STUDY HALL	KILE	500

ACTIVITY 3 (Contiued)

STUDENT: JIM TODDLER
ADVISOR'S #: 302
GRADE: 9
COUNSELOR: HUNT
SCHEDULE:

0	NONE		
1	ENGLISH I	FIELDS	201
2	PHY SCIENCE	MEAKER	102
3	TX HISTORY	COTTS	411
4	ALGEBRA I	ROBERTS	313
5	BAND	JONES	512
6	STUDY HALL	KILE	500

STUDENT: TOMMY BELL
ADVISOR'S #: 301
GRADE: 9
COUNSELOR: NEER
SCHEDULE:

0	NONE		
1	PHY SCIENCE	MEAKER	102
2	ENGLISH I	FIELDS	201
3	ALGEBRA I	ROBERTS	313
4	STUDY HALL	KILE	500
5	BAND	JONES	512
6	TX HISTORY	COTTS	411

STUDENT: JENNY NORMAN
ADVISOR'S #: 302
GRADE: 9
COUNSELOR: BROWN
SCHEDULE:

0	NONE		
1	ENGLISH I	FIELDS	201
2	PHY SCIENCE	MEAKER	102
3	TX HISTORY	COTTS	411
4	ALGEBRA I	ROBERTS	313
5	CHOIR	TALLEY	513
6	ART I	NEEL	515

ACTIVITY 3 (Continued)

STUDENT: MIKE HILL
ADVISOR'S #: 301
GRADE: 9
COUNSELOR: FRENCH
SCHEDULE:

0	NONE		
1	ENGLISH I	FIELDS	201
2	PHY SCIENCE	MEAKER	102
3	TX HISTORY	COTTS	411
4	ALGEBRA I	ROBERTS	313
5	BAND	JONES	512
6	STUDY HALL	KILE	500

STUDENT: JEFF ROWE
ADVISOR'S #: 303
GRADE: 9
COUNSELOR: BROWN
SCHEDULE:

0	NONE		
1	ENGLISH I	FIELDS	201
2	PHY SCIENCE	MEAKER	102
3	TX HISTORY	COTTS	411
4	ALGEBRA I	ROBERTS	313
5	CHOIR	TALLEY	513
6	WOODWORKING I	HOWL	110

STUDENT: KIM HULL
ADVISOR'S #: 402
GRADE: 10
COUNSELOR: FRENCH
SCHEDULE:

0	NONE		
1	VOLLEYBALL	HATCH	GYM
2	AM HISTORY	HENLEY	414
3	ENGLISH	CAGLE	203
4	STUDY HALL	KILE	500
5	TYPING	JOHNSON	212
6	ALGEBRA I	ROBERTS	313

ACTIVITY 3 (Continued)

STUDENT: WENDY JONES
ADVISOR'S #: 400
GRADE: 10
COUNSELOR: FRENCH
SCHEDULE:

0	NONE		
1	VOLLEYBALL	HATCH	GYM
2	AM HISTORY	HENLEY	414
3	ENGLISH	CAGLE	203
4	CHOIR	TALLEY	513
5	TYPING	JOHNSON	212
6	ALGEBRA I	ROBERTS	313

STUDENT: JUSTIN STEEL
ADVISOR'S #: 400
GRADE: 10
COUNSELOR: BROWN
SCHEDULE:

0	NONE		
1	FOOTBALL	HUEY	GYM
2	AM HISTORY	HENLEY	414
3	ENGLISH	CAGLE	203
4	STUDY HALL	KILE	500
5	TYPING	JOHNSON	212
6	ALGEBRA I	ROBERTS	313

STUDENT: JARED DAVIS
ADVISOR'S #: 401
GRADE: 10
COUNSELOR: NEER
SCHEDULE:

0	NONE		
1	FOOTBALL	HUEY	GYM
2	AM HISTORY	HENLEY	414
3	ENGLISH	CAGLE	203
4	STUDY HALL	KILE	500
5	TYPING	JOHNSON	212
6	ALGEBRA I	ROBERTS	313

ACTIVITY 3 (Continued)

STUDENT: DONNA CATE
ADVISOR'S #: 201
GRADE: 12
COUNSELOR: NEER
SCHEDULE:

0	GOVERNMENT	ROGERS	410
1	ACCOUNTING	BREWESTER	213
2	ENGLISH IV	HARDEN	210
3	OFFICE ADM	STEVENS	109
4	COOP TRAINING		
5	COOP TRAINING		
6	COOP TRAINING		

STUDENT: AMY NOLES
ADVISOR'S #: 202
GRADE: 12
COUNSELOR: BROWN
SCHEDULE:

0	GOVERNMENT	ROGERS	410
1	ACCOUNTING	BREWESTER	213
2	ENGLISH IV	HARDEN	210
3	OFFICE ADM	STEVENS	109
4	COOP TRAINING		
5	COOP TRAINING		
6	COOP TRAINING		

STUDENT: MIKE KOWACK
ADVISOR'S #: 201
GRADE: 12
COUNSELOR: FRENCH
SCHEDULE:

0	GOVERNMENT	ROGERS	410
1	ADV DRAFTING	HOPPER	108
2	ENGLISH IV	HARDEN	210
3	ICT	CROSS	105
4	COOP TRAINING		
5	COOP TRAINING		
6	COOP TRAINING		

ACTIVTY 4: SEARCH THE DATABASE FOR SPECIFIC RECORDS

INSTRUCTIONS: Using the "Schedule" database, search for the following information.

1. Where is Bryan King 3rd period?
2. Where is Todd West 5th period?
3. Does Chanda Coffee have a "O" period?
4. Who is in Ms. Harden's 2nd period class?
5. What students have study hall 6th period?

ACTIVITY 5: CREATE REPORT SUMMARIES AND PRINT REPORTS

INSTRUCTIONS: **Using the "Schedule" database, print the following reports with proper headings.**

Report 1	Alphabetical list of students. List student name, grade, and counselor.
Report 2	A listing of students who are in Goverment 0 period.
Report 3	Alphabetical list of students who have Mrs. Stevens as an advisor. Her advisor number is 218.
Report 4	Jeff Row needs a copy of his schedule.
Report 5	A listing of all students in the 12th grade.

SECTION V

COMPUTER COMMUNICATION TOOLS

ESSENTIAL ELEMENTS

75.87(e)(1)(D), (5)(D)

1. Concepts and skills related to computer operation. The student will be provided opportunities to:

    D. Explore the concepts of telecommunication techniques and networking.

5. Concepts and skills related to advanced application software. The student will be provided opportunities to:

    A. Discuss integration of people and computers for productivity; and

    D. Identify tools for preparing information for mass distribution including desktop publishing graphics, and maintenance of electronic bulletin boards.

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SUGGESTED UNIT LESSON PLAN

SECTION V: COMPUTER COMMUNICATION TOOLS

UNIT I: TELECOMMUNICATIONS

ESSENTIAL ELEMENTS: 75.87 (e)(1)(D), (5)(D)

ALLOCATED TIME: 5 Hours

UNIT OBJECTIVE: Students will use telecommunications terminology when discussing and describing basic telecommunications concepts involving modems, software, bulletin boards, and other related telecommunications areas.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Properly use and define basic telecommunications terminology.
2. Describe the development of telecommunications and its uses.
3. Contrast and compare three types of modems.
4. Explain typical features of microcomputer data communication software packages.
5. Discuss procedures for uploading and downloading information.
6. Describe the kinds and types of teleconferencing, including bulletin boards.
7. Identify concepts of networking.

FOCUS: Telecommunications is continuously growing in importance in the business world. As it continues to grow, so does the need for the beginning worker to have a working knowledge of basic telecommunications terminology and concepts.

DOMAINS: Activities and competency tests have been designed to provide learning experiences utilizing the cognitive, psychomotor, or affective domains. Activities and competency tests are coded on the Activity and Competency Test Matrices.

BASIC SKILLS: Activities and competency tests have been designed to reinforce the basic skills of reading, writing, and/or mathematics. Activities and competency tests have been coded on the Activity and Competency Test Matrices.

CONTENT OUTLINE

- I. Telecommunications
  - A. Historical overview
  - B. Telecommunications applications
- II. Modems
  - A. Modem speeds
  - B. Types of modems
- III. Communications software
  - A. Purposes of communications software
  - B. Features of communications software
- IV. Uploading and downloading information
  - A. Uploading and downloading
  - B. Downloading techniques
  - C. Xmodem
- V. Transmission systems
  - A. Data communications devices
  - B. Facsimile systems
  - C. Electronic mail systems
  - D. Voice communications
- VI. Voice messaging, or voice mail
  - A. Background
  - B. Future of voice messaging
  - C. Hardware requirements
  - D. Uses of voice mail
  - E. Procedures for accessing a voice-mail number

- F. Features of voice mail
- G. Advantages of using voice mail
- H. How voice-mail systems work
- I. Methods of providing voice-mail services
- J. User procedures

VII. Teleconferencing

- A. Kinds of teleconferencing
- B. Criteria for conference participation
- C. Reasons for using teleconferencing
- D. Modes of teleconferencing
- E. Levels of teleconferencing

VIII. Transmitting information through networking

- A. Defining networking
- B. Network components
- C. Networking concepts
- D. Technology
- E. Network setup procedures
- F. Network configurations
- G. Types of networks
- H. Advantages and disadvantages of using networks

IX. Careers in telecommunications

- A. Career growth
- B. Types of careers
- C. Specialization

SUGGESTED TEACHER ACTIVITIES

General Teacher Preparation

1. Preview unit.
2. Review unit objectives.
3. Make instructional analysis.
4. Assess student learning needs.
5. Decide on lesson domain: cognitive, psychomotor, or affective domain.
6. Select instructional materials based on instructional analysis and student learning needs.
7. Select instructional strategies based on lesson content and student learning needs.
8. Prepare lesson plans from the unit lesson.
9. Prepare additional instructional material.
10. Reserve necessary media and equipment.

Teacher Presentation

1. Present student objectives.
2. Establish rapport with students.
3. Review lesson objectives with students.
4. Relate lesson to prior or future learning.
5. When appropriate, encourage student interaction through questioning, discussions, or some other strategy.
6. Emphasize the value/importance of the unit or activity.
7. Allow time for closure of a lesson.

Reteach Activities

1. Identify area(s) of weakness from results of evaluation.
2. Select unit activities not previously used.
3. Use additional resources and/or create materials based on student learning needs.
4. Use a different teaching strategy in reteaching.
5. Retest.

Specific Teaching Suggestions

1. Prepare bulletin boards with pictures of various types of modems and brochures about teleprocessing hardware and software and networking configurations.

2. Provide students with current computer periodicals and/or access to the school library for research.

3. Have someone from the local phone company discuss telecommunications with the class.

4. Make arrangements for a dedicated phone line, modem, and communication software to be available for use, or provide simulators.

5. Have a modem demonstrated in class.

6. Go through uploading and downloading procedures.

7. Have a local cable and/or telephone company representative discuss his/her part in telecommunications.

8. Draw or find examples of the various networking configurations so that the students can visualize their setup.

9. Have students present some of their reports orally.

ACTIVITY MATRIX

Activities	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
1	X			X		
2 Project 1	X				X	
Project 2	X			X	X	
Project 3	X			X	X	
3 Project 1	X				X	
Project 2	X				X	
Project 3	X				X	
4 Project 1	X				X	
Project 2	X				X	
5	X				X	
6 Project 1	X				X	
Project 2	X			X		
Project 3	X				X	
Project 4	X				X	
7 Project 1	X				X	
Project 2	X			X		
Project 3	X	X		X	X	
8 Project 1	X				X	
Project 2	X				X	
Project 3	X				X	

COMPETENCY TEST MATRIX

Parts	**Domains**			**Basic Skills**		
	Cognitive	**Psycho-motor**	**Affective**	**Reading**	**Writing**	**Math**
I	X			X		
II	X				X	
III Project 1	X			X		
Project 2	X				X	
IV Project 1	X				X	
Project 2	X			X		
V	X				X	
VI Project 1	X				X	
Project 2	X				X	
Project 3	X				X	
VII Project 1	X			X	X	
Project 2	X			X		
VIII Project 1	X			X	X	
Project 2	X				X	
Project 3	X				X	

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PART I: TERMINOLOGY

INSTRUCTIONS: Fill in the blank with the correct term.

________________ 1. The connection between the sender and the receiver.

________________ 2. The file server in a local network, or the mainframe in other networks.

________________ 3. A computer with software and storage dedicated to communicating with other computers over telephone lines.

________________ 4. A network configuration in which all stations are connected by one path to the central computer, but the paths are not connected to each other.

________________ 5. A measure of the number of bits per second transmitted.

________________ 6. A means of transmission using glass fiber.

________________ 7. A process in which the receiving computer sends a signal to tell the sending computer that it is ready to receive data.

________________ 8. The electronic transmission of information, whether it is voice or data.

________________ 9. The exchange of data between minicomputers and mainframes.

________________ 10. Short for modulator-demodulator.

________________ 11. Conversion of a signal from digital to analog.

________________ 12. In telegraphic communications, this refers to the transmitting of a telegraphic message.

________________ 13. A network configuration in which mainframes, each with its own star network, are connected.

________________ 14. An organization, such as the telephone company, that is authorized by the FCC to offer communication services.

________________ 15. Simultaneous access to a shared central computer facility by many users.

PART I (Continued)

____________________ 16. A system that has a central computer, but some processing is done at remote sites.

____________________ 17. A network that is limited to one room, building, or complex.

____________________ 18. A channel for sending data by microwaves through a series of relay stations.

____________________ 19. Coded identification required to access some bulletin boards and information services.

____________________ 20. A set of rules for exchange of information between computers in a communication system.

PART II: DEVELOPMENT OF TELECOMMUNICATIONS AND ITS USES

INSTRUCTIONS: List, in sequence, five events in the development of telecommunications, from earliest to present time.

Telecommunications development time line:

1.

2.

3.

4.

5.

PART III: MODEMS

Project 1

INSTRUCTIONS: **Match the modem characteristics with the correct modem speed. Answers may be used more than once.**

MODEM CHARACTERISTICS

_______ 1. The most common speed of modem used.

_______ 2. The oldest, slowest modem available.

_______ 3. Very expensive and has special uses.

_______ 4. Takes a minute and a half to transmit a double-spaced page.

_______ 5. Takes 20 seconds to transmit a double-spaced page.

_______ 6. Can operate at both 300- and 1200-baud rates.

_______ 7. Transmits at a speed of 30 characters per second.

_______ 8. Transmits at 120 characters per second.

_______ 9. Transmits at 240 characters per second.

_______ 10. Takes 10 seconds to transmit a double-spaced page.

MODEM SPEED

A. 300

B. 1200

C. 2400

D. 4800 and above

PART III (Continued)

Project 2

INSTRUCTIONS: Describe three types of modems.

1.

2.

3.

PART IV: COMMUNICATION SOFTWARE

Project 1

INSTRUCTIONS: Describe two purposes of communication software.

1.

2.

PART IV (Continued)

Project 2

INSTRUCTIONS: **Fill in the blank the appropriate name of each communication software feature.**

____________________ 1. Rules used.

____________________ 2. Allows the computer to perform like a terminal extension of a mainframe.

____________________ 3. A series of keystrokes, saved as a file, which can be invoked by depressing one or two keys.

____________________ 4. Used for short messages not worth saving on a disk.

____________________ 5. Tool for composing a brief message.

____________________ 6. Temporarily stores data on the screen.

____________________ 7. Splits the screen to see message being transmitted and what is being typed.

PART V: UPLOADING AND DOWNLOADING

INSTRUCTIONS: Describe basic uploading and downloading telecommunications procedures.

PART VI: VOICE MESSAGING

Project 1

INSTRUCTIONS: **List the procedural steps for accessing voice-mail. Make sure to describe what to do when the correct mailbox has been reached.**

Project 2

INSTRUCTIONS: **Explain any five of the voice-mail features.**

1.

2.

3.

4.

5.

PART VI (Continued)

Project 3

INSTRUCTIONS: **Discuss four advantages of using voice messaging for businesses.**

1.

2.

3.

4.

PART VII: TELECONFERENCING

Project 1

INSTRUCTIONS: Answer the following questions in the space provided.

1. Define teleconferencing.

2. The main piece of hardware needed for audioconferencing is a _______________.

3. The primary reason that businesses select audioconferencing over videoconferencing is _______________.

4. _______________ and _______________ are the two methods used in videoconferencing.

5. Hotels and private companies offer facilities for _______________ videoconferencing for companies that cannot afford it.

6. The least expensive videoconferencing method is _______________.

7. The type of videoconferencing that allows all participants to be seen is called _______________ videoconferencing.

8. Providing _______________ is a disadvantage of audioteleconferencing.

9. The three reasons that businesses prefer to use teleconferencing are:

   (1)

   (2)

   (3)

10. Explain why videoteleconferencing has never caught on.

PART VII (Continued)

Project 2

INSTRUCTIONS: Place a T for True or an F for False in the space provided.

_______ 1. It is suggested that participants in videoconferencing do not need any special training.

_______ 2. Videoconferencing is more expensive than audioconferencing.

_______ 3. There is no record of a message created during teleconferencing.

_______ 4. It is necessary to use both one-way and two-way conferencing when the audience does not need to participate.

_______ 5. It is not necessary to establish procedures for using teleconferencing facilities.

_______ 6. Nonverbal messages cannot be sent over the telephone.

_______ 7. Anyone desiring to participate in a computer conference must use a password.

PART VIII: NETWORKING

Project 1

INSTRUCTIONS: Answer the following questions.

1. Define networking and its components.

2. The type of network that is often confined to a building is a ______________.

______ 3. A twist-pair network is a

A. Flat cable.
B. Pair of wires that is twisted around each other.
C. Cable made of glass rods.
D. Single copper wire insulated with rubber shielding.

______ 4. A star configuration is one in which

A. All of the various modes of the network are linked together in a daisy chain.
B. A flat cable is used as a common carrier between the stations, which are simply placed along its length.
C. The master controller sits on the hub, and all the various spokes of the system are connected to it.
D. None of the above.

______ 5. Local area networks

A. Use a public telephone system.
B. Use a public access, long-distance network.
C. Must be routed through a telephone PBX switchboard.
D. None of the above.

T F 6. Local networks are limited to the use of four computers.

T F 7. Paper documents are still used as often as electronic documents.

T F 8. An expensive printer can be used to better advantage if it is networked to as many work stations as possible.

PART VIII (Continued)

Project 2

INSTRUCTIONS: Identify concepts, advantages, and disadvantages of networking.

PART VIII (Continued)

Project 3

INSTRUCTIONS: Draw the three major types of networks.

ANSWERS TO ACTIVITIES

Activity 1

```
   HANDSHAKING  FILE
 F O            I A
 I S  D  P  H   B N
 L T COMMONCARRIER
 E C  W  I  L   R
 S O  N  N  F  MODEM
 E-MAIL  T  D   P
 R P  O  T FULL T
 V U  A  O  L  RING
 E T  D  P  E   C
 R E      O  X   S S
   R      I        T
    B     N        A
  C ACOUSTICCOUPLER
  H U    L
  A DISTRIBUTEDDATA
  N R    N
  N A  HIERARCHICAL
  E T
BULLETINBOARD
```

Activity 2

<u>**Project 1**</u>

1. Early communication was accomplished through the use of smoke signals and drums.

2. The advent of the telegraph in 1844 and the telephone in 1876 made rapid communication over much longer distances possible.

3. The latter part of the 19th century introduced the development of wires made of copper that were twisted in pairs and used for long-distance transmission.

4. Experiments in the 1920s led to the transmission of pictures.

5. During World War II, telecommunications through the use of AM, FM, UHF, and shortwave was researched and developed.

6. In the 1950s, the Bell system introduced transmission of voice, data, and video over microwave, radio relay systems. This began the era of television and long-distance calling.

7. In the 1960s, the integrated chip was used in the first computer-controlled PBX.

8. Minicomputers and modems were introduced in the 1970s.

9. Several technological changes took place which improved voice and data transmission.

10. Personal computers were introduced in 1975.

11. Enhanced transmission processes and fiber optics were being developed and introduced in the early 1980s to improve the transmission of voice, data, and video.

12. A multiple-vendor environment was established with the breakup of the Bell System in 1984. This resulted in an explosion of telecommunications technologies.

13. In 1986, Local Area Networks (LAN) were introduced in order to meet the needs of users desiring to share peripherals, resources, and data.

Project 2 Evaluated to the satisfaction of the instructor.

Project 3 Answers will vary according to the lecture and resources used. Evaluated to the satisfaction of the instructor.

Activity 3

Project 1

Modem stands for MOdulator DEModulator. A modem converts a stream of data sent from your computer into tones that can be transmitted over a telephone line.

Project 2

1. The 300-baud modems are the oldest, slowest, and they were the most common.
    a. Transmit at the speed of 30 characters per second.
    b. Take about 1 1/2 minuets to transmit a double-spaced page of text.

2. The 1200-baud modem is now the most common one used.
    a. Transmits at the speed of 120 characters per second.
    b. Takes about 20 seconds to transmit a double-spaced page of text.

3. The 2400-baud modems are becoming more popular as they become cheaper.
    a. Services are still lacking.
    b. Can operate at both the 300- and 1200-baud rates.
    c. Transmit 240 characters per second.
    d. Take about 10 seconds to transmit a double-spaced page of text.

4. Modems are also available at 4800 and 9000 bauds for specialized uses. They are, however, very expensive.

Project 3 — Any three of the following:

1. External modems are the most common.
   a. Looks like a small box that connects to the communication port on the computer.
   b. Works with several types of computers at the same time.

2. An internal modem is a printed circuit board that plugs directly into one of the expansion slots of the computer.
   a. Takes up very little space.
   b. Limited to working with the computer for which it was purchased.

3. Acoustic modems
   a. Use rubber cups that hold the telephone handset.
   b. They are the oldest type of modem but are no longer used, because they are slow and do not have any automatic features.

4. Direct-connect modems connect directly to a telephone line.

Activity 4

Project 1

1. Acts as a bridge between the computer and the modem.
2. Software provides the modem with various commands.
3. Assures compatibility of sending and receiving computers.

Project 2 — Answers may vary and should be evaluated to the satisfaction of the instructor. Any six of the following:

1. Capture buffers temporarily store data that appear on the screen and can be reviewed, printed, or saved on disk.
2. Macros are a series of keystrokes saved as a file which can be invoked by depressing one or two keys.
3. Transfer protocols are relatively simple.
4. Simultaneous printing is useful for short messages that are not worth saving on disk. A program that cannot print out while on-line is to be avoided.
5. Text editor is a handy tool for composing a brief message or editing a file you captured without disconnecting from the computer or using a word processing program.
6. Terminal emulation allows the computer to perform like a terminal extension of a mainframe.
7. Chat mode splits the screen to allow type-talking, with one part of the screen showing the message being transmitted, and the other part showing your own typing. An advantage of this is that the two transmissions do not get mixed up, and there is more control over what is typed.

Activity 5 Evaluated to the satisfaction of the instructor. Answers will be based on demonstration of the specific software and equipment used.

Activity 6

Project 1 Answers may vary.

1. Dial the 800 access number for voice mail.
2. Provide the identification number or password when requested.
3. Utilize the full range of features.
4. Wait, as the system automatically checks for messages.
5. Verify that the correct mailbox has been reached.
6. When correct mailbox has been reached, do one of the following:
   a. Cancel the message.
   b. Leave a message.
   c. Sign off.
   d. Access any other function through the main series of access commands.

Project 2

1. Scan
2. Security
3. Tracking
4. Save
5. Delivery verification
6. Reply
7. Prompt override
8. Edit
9. Broadcast
10. Redirect

Project 3 Any five of the following:

1. Everyone on the system will check his/her voice mailbox for messages at least twice a day.
2. Instead of leaving messages with a secretary, employees will call their mailboxes. This will save the secretary time.
3. Use of telephone charge cards will be reduced.
4. Specific messages can be left rather than "Please call...."
5. Voice mail can be used to set the date and time of appointments.
6. You are credited with picking up messages. The ID code should never be provided to someone to pick up messages. The other person would then have access to your confidential messages.

Project 4 Answers may very. Evaluated to the satisfaction of the instructor.

1. Can be used for several uses in the office:
   a. Notes of things to do
   b. Phone messages
   c. Information from colleagues

2. Messages are no longer lost or missed; increases effectiveness by eliminating telephone tag.
3. Messages can be left at any time at the main office (even weekends) and despite differences in time zones.
4. Assists in reducing:
    a. Wasted time and expense of phone communications.
    b. Uncertainty.
5. Available 24 hours a day, seven days a week.
6. Able to store and forward messages.
7. Provides some confidentiality.

Activity 7

Project 1 Evaluated to the satisfaction of the instructor.

Project 2

1. J
2. G
3. K
4. I
5. B
6. F
7. C
8. H
9. D
10. A

Project 3 Evaluated to the satisfaction of the instructor.

Activity 8

Project 1 Descriptions evaluated to the satisfaction of the instructor.

1. Work stations
2. Networks interface card
3. Channeling
4. File or print server
5. User application programs
6. Software

Project 2 Evaluated to the satisfaction of the instructor. The following information should be included.

1. The purpose behind networking, or any multiuser system is sharing information and distributing work. The way in which this is accomplished varies according to the type of equipment being used, the geographical distribution, and the kinds of work being done.

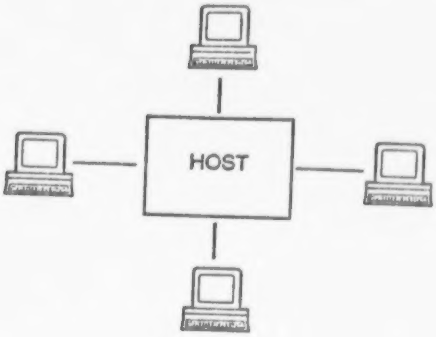
2. In distributed data processing, an organization may have one large central computer with files that will be accessed and updated by stations throughout the region.

   a. For greater efficiency, work that does not require on-line access of the master files can be done at the remote sites.
   b. Sometimes in distributed processing, several computers in the system are each assigned some of the central work.

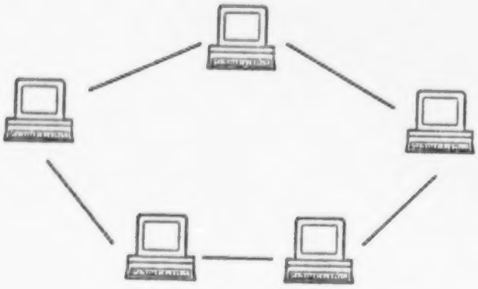
3. With a local area network, workers in each office in a building can access certain files as needed without having to leave their own desks.
   a. When microcomputers are used, each microcomputer can be used as a stand-alone computer, and the user only needs to log onto the network when necessary.
   b. Messages can be sent from one work station to another.

Project 3

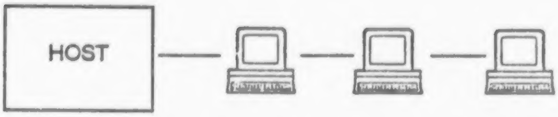
STAR NETWORK



RING NETWORK



BUS NETWORK



ANSWERS TO COMPETENCY TEST

Part I

1. Channel
2. Host computer
3. Bulletin board
4. Hierarchical
5. Baud rate
6. Fiber optics
7. Handshaking
8. Telecommunications
9. Teleprocessing
10. Modem
11. Modulation
12. File
13. Multistar
14. Common carrier
15. Time-sharing
16. Distributed data processing
17. LAN
18. Microwave transmission
19. Password
20. Protocol

Part II Any five of the following. Answers should be in sequential order from the earliest to present time.

1. Early communication was accomplished through the use of smoke signals and drums.

2. The advent of the telegraph in 1844 and the telephone in 1876 made rapid communication over much longer distances possible.

3. The latter part of the 19th century introduced the development of wires made of copper that were twisted in pairs and used for long-distance transmission.

4. Experiments in the 1920s led to the transmission of pictures.

5. During World War II, telecommunications through the use of AM, FM, UHF, and shortwave was researched and developed.

6. In the 1950s, the Bell system introduced transmission of voice, data, and video over microwave, radio relay systems. This began the era of television and long-distance calling.

7. In the 1960s, the integrated chip was used in the first computer-controlled PBX.

8. Minicomputers and modems were introduced in the 1970s.

9. Several technological changes took place which improved voice and data transmission.

10. Personal computers were introduced in 1975.

11. Enhanced transmission processes and fiber optics were being developed and introduced in the early 1980s to improve the transmission of voice, data, and video.

12. A multiple-vendor environment was established with the breakup of the Bell System in 1984. This resulted in an explosion of telecommunications technologies.

13. In 1986, Local Area Networks (LAN) were introduced in order to meet the needs of users desiring to share peripherals, resources, and data.

Part III

Project 1

1.	B	6.	C
2.	A	7.	A
3.	D	8.	B
4.	A	9.	C
5.	B	10.	C

Project 2 Any three of the following:

1. External modems are the most common.
   a. Looks like a small box that connects to the communication port on the computer.
   b. Works with several types of computers at the same time.

2. An internal modem is a printed circuit board that plugs directly into one of the expansion slots of the computer.
   a. Takes up very little space.
   b. Limited to working with the computer for which it was purchased.

3. Acoustic modems
   a. Use rubber cups that hold the telephone handset.
   b. They were the first used but are no longer used, because they were slow, and they did not have any automatic features.

4. Direct-connect modems connect directly to a telephone line.

Part IV

Project 1 Any two of the following:

1. Acts as a bridge between the computer and the modem.
2. Software provides the modem with various commands.
3. Assures compatibility of sending and receiving computers.

Project 2

1. Protocols
2. Terminal emulation
3. Macro
4. Simultaneous printing
5. Text editor
6. Capture buffer
7. Chat mode

Part V Answers may vary and should be evaluated to the satisfaction of the instructor.

Part VI

Project 1 Answers may vary according to the system used.

1. Dial the 800 access number for voice mail.
2. Provide the identification number of password when requested.
3. Utilize the full range of features.
4. Wait, as the system automatically checks for messages.
5. Verify that the correct mailbox has been reached.
6. When correct mailbox has been reached, do one of the following:
   a. Cancel the message.
   b. Leave a message.
   c. Sign off.
   d. Access any other function through the main series of access commands.

Project 2 Explanations may vary; therefore, they should be evaluated to the satisfaction of the instructor. Any five of the following may be explained:

1.	Scan	This can be done to messages before listening to the whole thing.
2.	Security	Prevents unauthorized access.
3.	Tracking	Keeps an account of the number of messages.
4.	Save	Storing a message for further action or replay.
5.	Delivery verification	System will inform the sender when a voice message has been delivered.
6.	Reply	One user can answer a message from another user.
7.	Prompt override	Allows the experienced user to skip standard voice prompts.
8.	Edit	Changing section of a message.
9.	Broadcast	Message is spoken once but is distributed to several mailboxes.
10.	Redirect	Rerouting message to other voice-mail system users.

Project 3

Any four of the following:

1. Can be used for several uses in the office: notes of things to do, phone messages, information from colleagues.
2. Messages are no longer lost or missed; increases effectiveness by eliminating telephone tag.
3. Messages can be left at any time at the main office (even weekends) and despite differences in time zones.
4. Assists in reducing wasted items and expense of phone communications and uncertainty.
5. Available 24 hours a day, 7 days a week.
6. Ability to store and forward messages.
7. Provides some confidentiality.

Part VII

Project 1

1. *Teleconferencing* is electronically linked conferences conducted over the telephone among people in widely separated locations.
2. Telephone
3. Cost
4. One-way, two-way
5. One-way
6. One-way
7. Two-way
8. An operator
9. Saves time, money, replaces travel.
10. Videoteleconferencing has never caught on because of its considerable expense.

Project 2

1. F
2. T
3. F
4. F
5. T
6. T
7. F

Part VIII

Project 1

1. *Networking* is defined as the joining of two or more computers to share information or peripherals. This is accomplished through communication between computers and peripherals that is transmitted through some form of cabling, such as telephone wire, fiberoptic cable, or other mechanisms.

Components:
- Work stations
- Network interface card
- Channels
- File or print server
- User application programs
- Software

2. Local area
3. B
4. C
5. D
6. F
7. F
8. F

Project 2

Concepts of networking:

1. The purpose behind networking, or any multiuser system, is sharing information and distributing work. The way in which this is accomplished varies according to the type of equipment being used, the geographical distribution, and the kinds of work being done.

2. In distributed data processing, an organization may have one large central computer with files that will be accessed and updated by stations throughout the region.
    a. For greater efficiency, work that does not require on-line access of the master files can be done at the remote sites.
    b. Sometimes in distributed processing, several computers in the system are each assigned some of the central work.

3. With a local area network, workers in each office in a building can access certain files as needed without having to leave their own desks.
    a. When microcomputers are used, each microcomputer can be used as a stand-alone computer, and the user only needs to log onto the network when necessary.
    b. Messages can be sent from one work station to another.

Advantages:

1. The most obvious advantage is the ability to access and share data files.
2. Another clear advantage is the ability to send and receive messages.
3. A third advantage, sometimes the most important, is for backup, when needed. The resulting crisis that so often occurs when a computer "goes down" is avoided when another microcomputer can be used to access the file server or other stations.

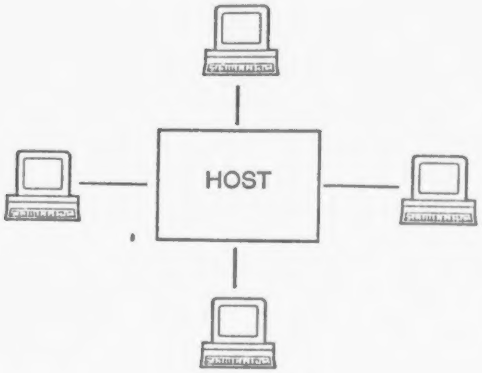
Disadvantages:

1. There are few disadvantages with local area network, because users have the option of being off-line or on-line.
2. The extra cost and complication of installing the network hardware and software might be a disadvantage to some.
3. If there is a dependency on the central file and adequate backup is not maintained, the same problems could occur as in any centralized system. If the file server is down, then the whole network is down.
4. Some find that networks are difficult to install and manage.
5. Obtaining networkable software is frequently challenging.

Project 3

(See chart on next page)

STAR NETWORK



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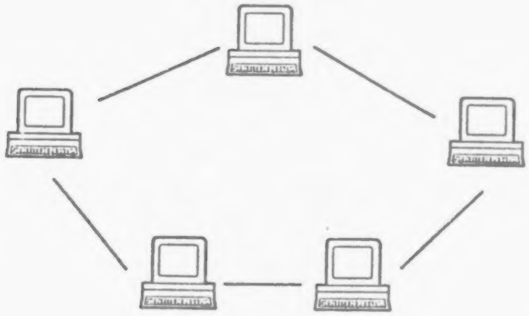
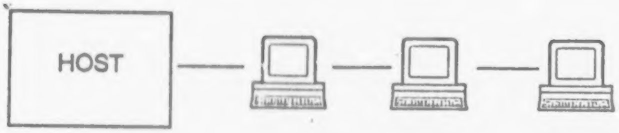


BUS NETWORK



RESOURCES

TEXT/WORKBOOKS

COMMUNICATIONS STUDY GUIDE UNIT 1 COMPUTER FUNDAMENTALS FOR AN INFORMATION AGE
Shelly and Cashman

THE COMPLETE HANDBOOK OF PERSONAL COMPUTER COMMUNICATIONS
St. Martin's Press

COMPUTER CONCEPTS
SRA

COMPUTER INFORMATION SYSTEMS
South-Western Publishing Co.

COMPUTERS TODAY
Gregg Division/McGraw Hill Book Co.

THE ELECTRONIC OFFICE
Prentice-Hall

ESSENTIAL GUIDE TO BULLETIN BOARD SYSTEMS
Meckler Publishing Corp.

GUIDE TO IBM PC COMMUNICATIONS
Borland, Obsborne, and MicroPro
McGraw-Hill Publishers

HOW TO LOOK IT UP ON-LINE
St. Martin's Press

INTENSIVE OFFICE SKILLS REVIEW
South-Western Publishing Co.

INTRODUCTION TO BUSINESS TELECOMMUNICATIONS
Charles E. Merrill Publishing Co.

INTRODUCTION TO COMPUTERS AND INFORMATION PROCESSING
Reston Publishing Co., Inc.

INTRODUCTION TO TELECOMMUNICATIONS
Educational Development and Training Center
East Texas State University

LOCAL AREA NETWORKS
Borland, Osborne, and MicroPro
McGraw-Hill Publishers

NATIONAL DIRECTORY OF BULLETIN BOARD SYSTEMS

OFFICE AUTOMATION
AMACOM

OFFICE PROCEDURES
Gregg Division/McGraw Hill Book Co.

OFFICE SYSTEMS AND PROCEDURES
Houghton-Mifflin

TELECOMMUNICATIONS: CONCEPTS, DEVELOPMENT, AND MANAGEMENT
Bobbs-Merrill Educational Publishers

TELEPHONE COMMUNICATIONS
Prentice-Hall Media, Service Code H

USING SPRINT
Borland, Osborne, and MicroPro
McGraw-Hill Publishers

SOFTWARE

INFORMATIONS FOCUS
Random House School Division

NEWSROOM
Springboard

THE OTHER SIDE
Tom Snyder Productions

PRO-COM-A
Prometheus

MEDIA

BUSINESS TELEPHONE ETIQUETTE
Slide-Tape Presentation
(Includes teacher's guide, student booklet, and competency test)
Educational Development and Training Center
East Texas State University

COMMUNICATING ON THE JOB
Film, cassettes, teacher manual
Career Aids, Inc.

ELECTRONIC MAIL
Milady Publishing Co.

OFFICE COMMUNICATION
Filmstrips, trainee work plan
Prentice-Hall Media

TELEPHONE COURTESY PAYS: LISTENING UNDER PRESSURE
Video/w/facilitator's guide and posters
Career Aids, Inc.

TELEPHONE DYNAMICS
Western Tape

TELECOMMUNICATIONS SIMULATORS

THE ELECTRONIC MAILBAG
An electronic mail simulator with a complete curriculum. Multiboot permission is granted for up to three computers
Exsym

THE ELECTRONIC VILLAGE
A site-licensed simulation and tutorial introduction to telecommunications and bulletin board systems. Also comes with materials in telecommunications ethics.
Exsym

GBBS "PRO"
Apple-based bulletin board software simulation.
Micro Data Products

INFORMATION CONNECTION
A package which simulates an on-line information search using a limited version of the Grolier-on-line encyclopedia currently available from CompuServe.
Grolier Electronic Publishing

WINDOW ON TELECOMMUNICATIONS
A unique, site-licensed telecommunications vocabulary simulator
Exsym

COMPETENCY CHECKLIST

ESSENTIAL ELEMENTS: 75.87 (e)(1)(D), (5)(D)

The students will be provided opportunities to explore the concepts of telecommunications techniques and networking, and to identify tools for preparing information for mass distribution, including desktop publishing, graphics, and maintenance of electronic bulletin boards.

OBJECTIVE:	Students will use telecommunications terminology when discussing and describing basic telecommunications concepts involving modems, software, bulletin boards, and other related telecommunications areas.	MASTERY	NON-MASTERY
1.	Properly use and define basic telecommunications terminology.	________	________
2.	Describe the development of telecommunications and its uses.	________	________
3.	Contrast and compare three types of modems.	________	________
4.	Explain typical features of microcomputer data communication software packages.	________	________
5.	Discuss procedures for uploading and downloading information.	________	________
6.	Describe the kinds and types of teleconferencing, including bulletin boards.	________	________
7.	Identify concepts of networking.	________	________
		________	________
		________	________

STUDENT NAME____

SUGGESTED UNIT LESSON PLAN

SECTION V: COMPUTER COMMUNICATION TOOLS

UNIT II: CONCEPTS OF COMPUTER GRAPHICS

ESSENTIAL ELEMENT: 75.87 (e)(5)(D)

ALLOCATED TIME: 5 Hours

UNIT OBJECTIVE: Students will demonstrate comprehension of the graphic representation of data, execute graphs for specific data sets, and discuss the applications of computer graphics.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Define and use graphics-related terminology.
2. Describe basic graphic concepts.
3. Discuss important graphic design concepts.
4. Discuss the differences between presentation and free-drawing graphics.
5. Match different types of graphs with types of information appropriate for demonstration with those graphs.
6. Match different types of graphic hardware with graphic applications appropriate for that hardware.
7. Outline and discuss several different applications for computer graphics.
8. Create several graphic images to represent a variety of information.
9. Identify tools for preparing information for mass distribution including graphics.

FOCUS: As the ratio of capabilities versus price in computer hardware increases, computer graphics become more and more important in the functioning of today's businesses. Students should be prepared to address this issue by mastering the basics of computer graphics.

DOMAINS:	Activities and competency tests have been designed to provide learning experiences utilizing the affective, cognitive, and/or psychomotor domains. Activities and competency tests are coded on the Activity and Competency Test Matrices.
BASIC SKILLS:	Activities and competency tests have been designed to reinforce the basic skills of reading, writing, and/or mathematics. Activities and competency tests have been coded on the Activity and Competency Test Matrices.

CONTENT OUTLINE

- I. Defining graphics
  - A. How people see information
  - B. Why graphics and pictures should be used
  - C. Rapid expansion of business graphics usage recently
  - D. Computer graphics defined
  - E. Built-in graphics ability of application programs
  - F. Presentation graphics
  - G. Free-drawing graphics
- II. Basic graphics concepts
  - A. Basic components
  - B. Types and parts of a graph
  - C. Graphic design concepts
- III. Computer graphics applications
  - A. Communicating information
  - B. Statistical analysis
  - C. Flow-charting
  - D. CAD (computer-aided design)
  - E. CAM (computer-aided manufacturing)
  - F. Computer-simulated testing
  - G. Computer graphics as an art medium
  - H. Animation
  - I. Computer animation in the movies
  - J. Animation in video games and flight simulators
- IV. Important hardware required for graphics
  - A. Specialized graphics input devices
  - B. Specialized graphics output devices
  - C. Internal speed-up hardware for graphics

SUGGESTED TEACHER ACTIVITIES

General Teacher Preparation

1. Preview the unit.
2. Review unit objectives.
3. Make instructional analysis.
4. Assess student learning needs.
5. Decide on lesson domain: cognitive, psychomotor, or affective domain.
6. Select instructional material based on instructional analysis and other student learning needs.
7. Select instructional strategies based on lesson content and student learning needs.
8. Prepare lesson plans from the student unit lesson.
9. Prepare additional instructional material.
10. Reserve necessary media and equipment.

Teacher Presentation

1. Present student objectives.
2. Establish rapport with students.
3. Review lesson objectives with students.
4. Relate lesson to prior or future learning.
5. When appropriate, encourage student interaction through questioning, discussions, or some other strategy.
6. Emphasize the value/importance of the unit or activity.
7. Allow time for closure of a lesson.

Reteach Activities

1. Identify area(s) of weakness from results of evaluation.
2. Select unit activities not previously used.
3. Use additional resources and/or create materials based on student learning needs.
4. Use a different teaching strategy in reteaching.
5. Retest.

Specific Teaching Activities

1. Collect graphic examples showing the various types of graphs as well as the individual elements which compose these graphs.
2. Make available current magazines and newspapers which employ the kinds of computer graphics discussed in this unit.
3. Make available current computer magazines and other information about the computer graphics programs available and the applications for these programs in the business and professional world.
4. Send for brochures and/or demonstration copies of several popular computer graphics programs.
5. Competency test is designed so that the projects cover all competencies.

Activity 2

Project 2 Secure the graphic examples needed to complete this activity.

Activity 5

Project 1 Secure examples of the types of computer graphics needed to complete this matching activity.

Activity 8 Prepare a graphics program for student use and a set of data which students must represent graphically.

Competency Test

Project 3 Provide a graph for students to label its parts.

Project 4 Provide different types of graphs for students to identify.

Project 5 Prepare one or more graphics projects along with necessary instructions, programs, and data.

ACTIVITY MATRIX

Activities	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
1	X			X		
2 Project 1	X			X		
Project 2	X			X		
3 Project 1	X				X	
Project 2	X				X	
4 Project 1	X				X	
Project 2	X			X		
5 Project 1	X			X		
Project 2	X			X		
6	X			X	X	
7	X			X	X	
8	X	X		X	X	
9	X	X		X	X	

COMPETENCY TEST MATRIX

Parts	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
Project 1	X				X	
Project 2	X	X		X	X	
Project 3	X				X	
Project 4	X			X		
Project 5	X	X		X	X	

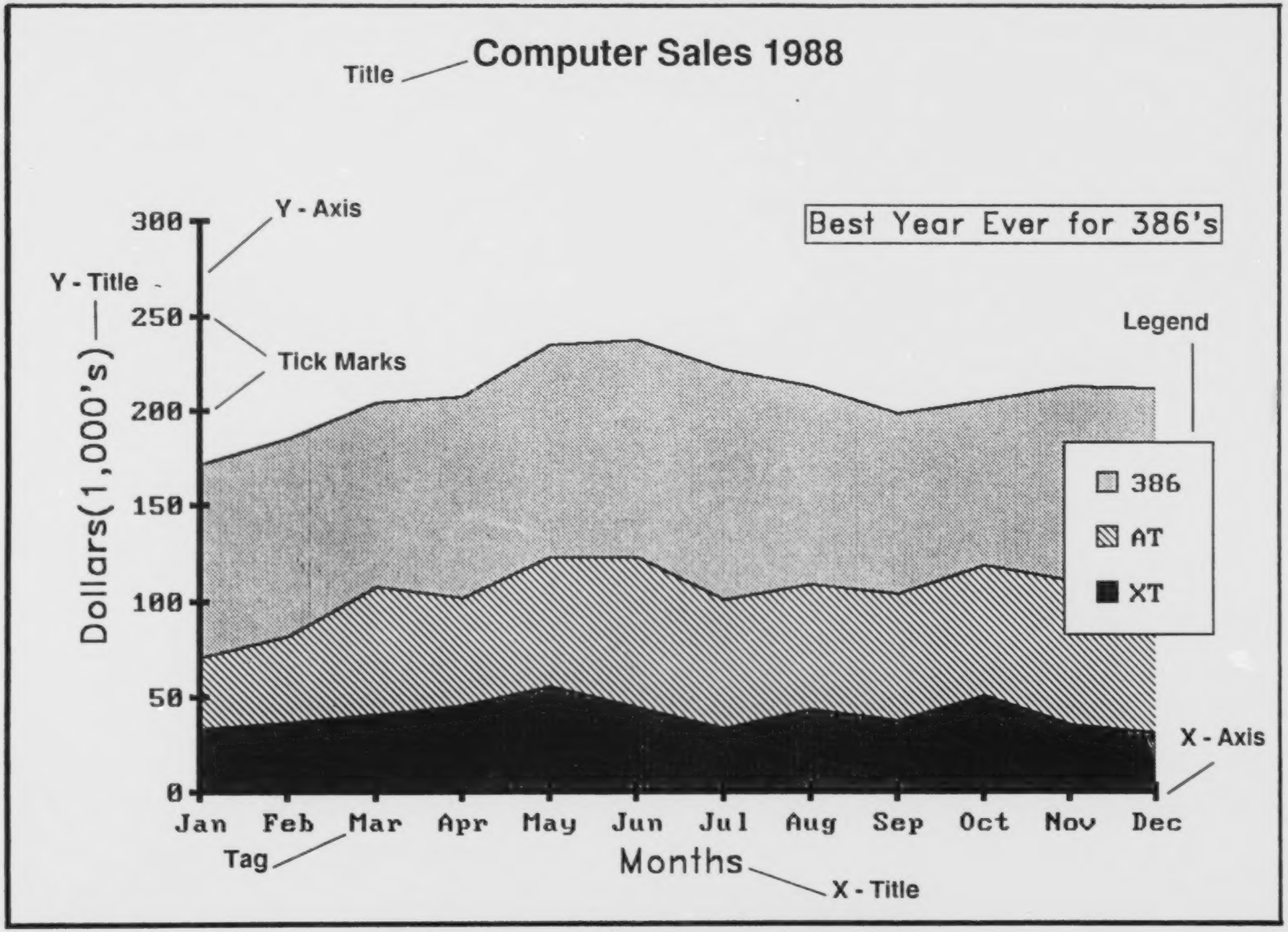


Figure 1. PARTS OF A GRAPH

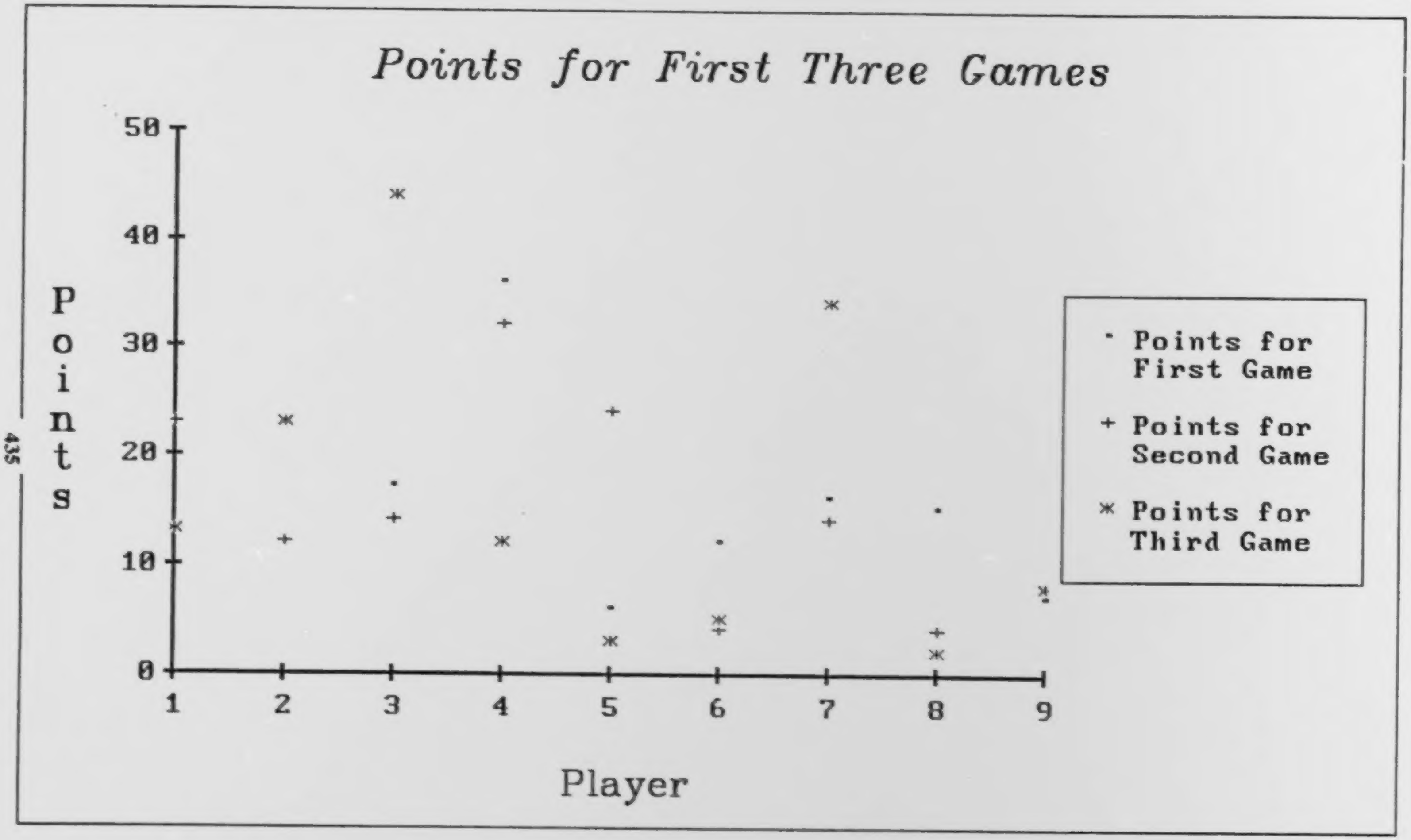


Figure 2. SCATTER GRAPH

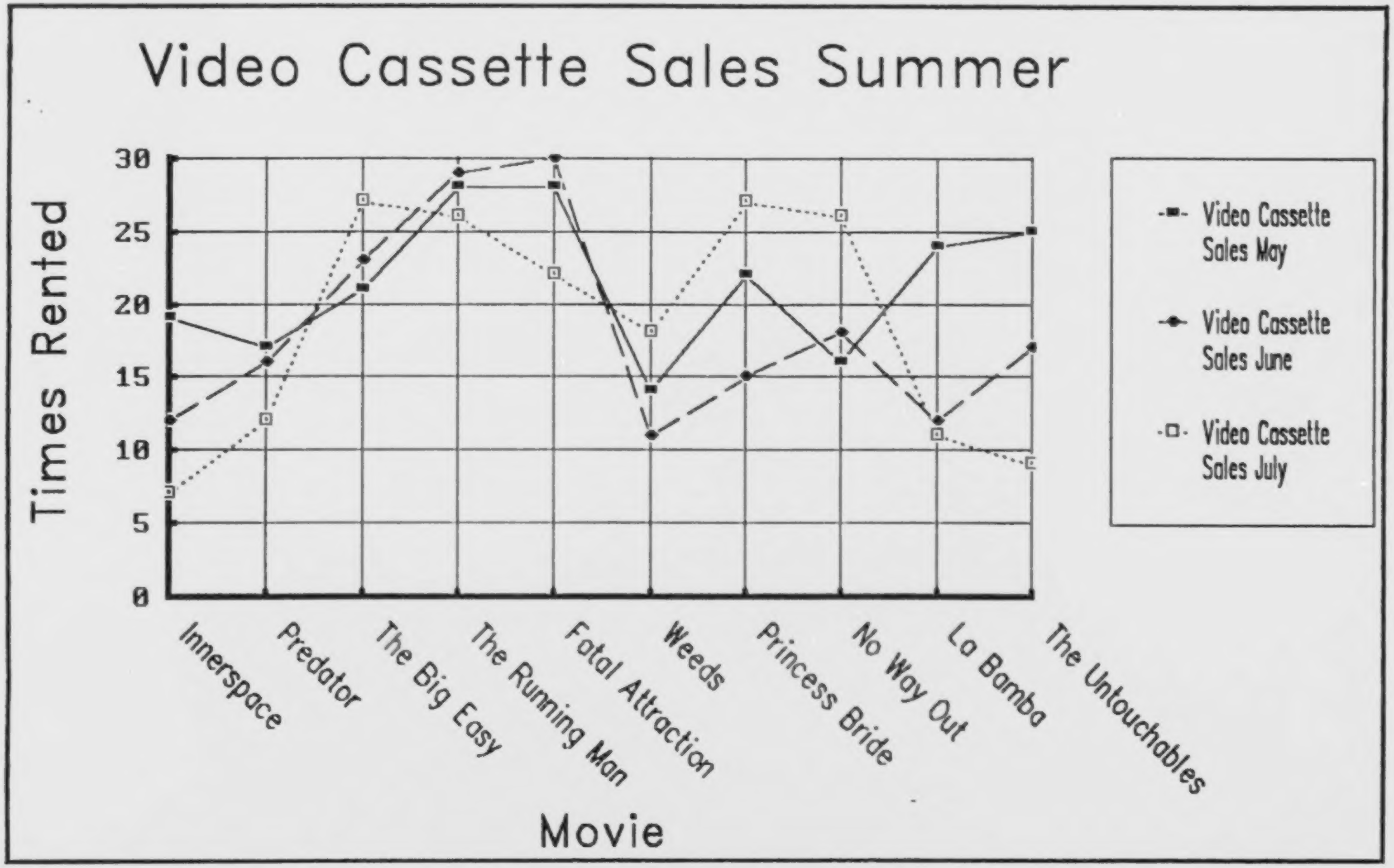


Figure 3. LINE GRAPH

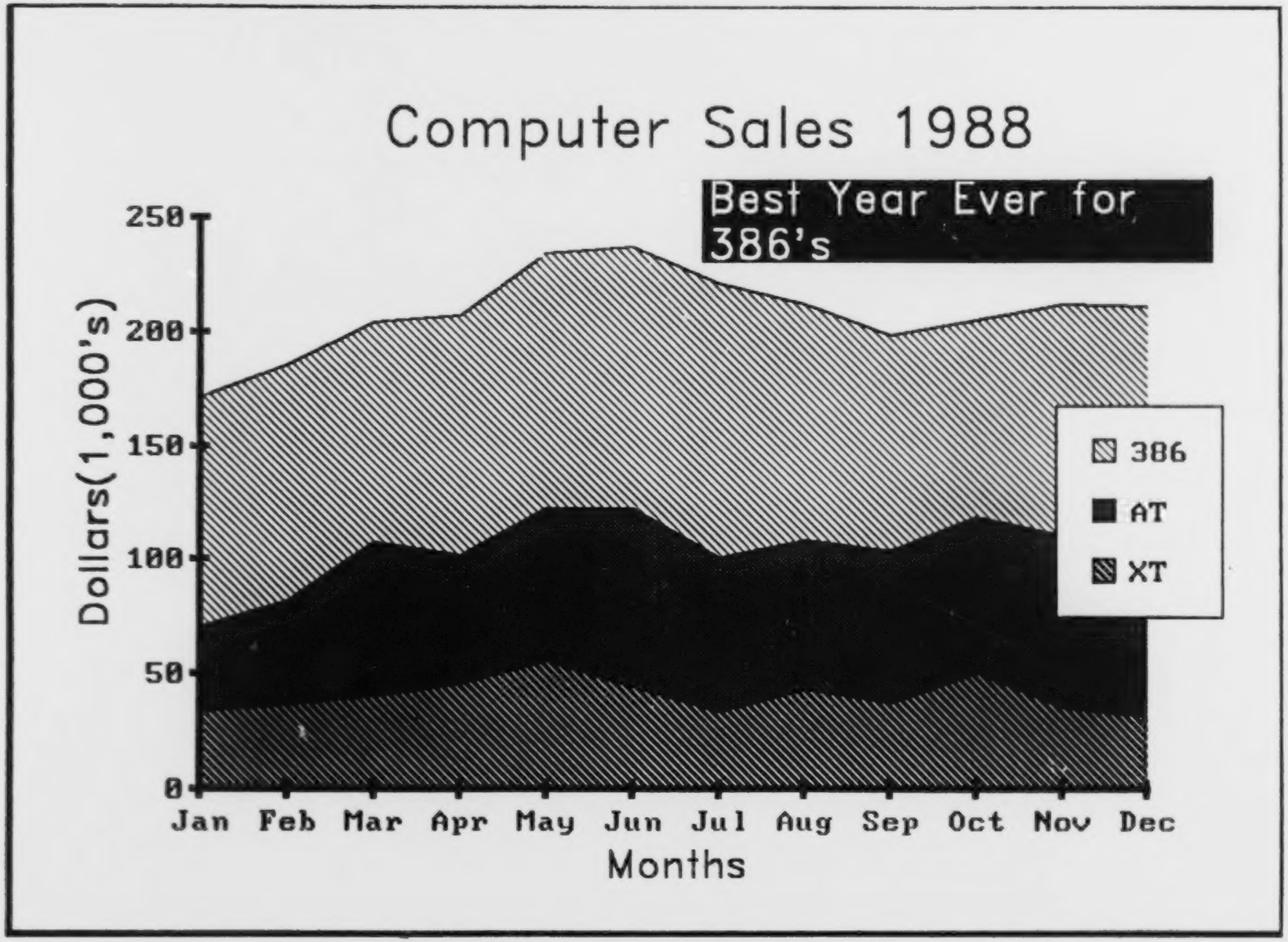


Figure 4. AREA GRAPH

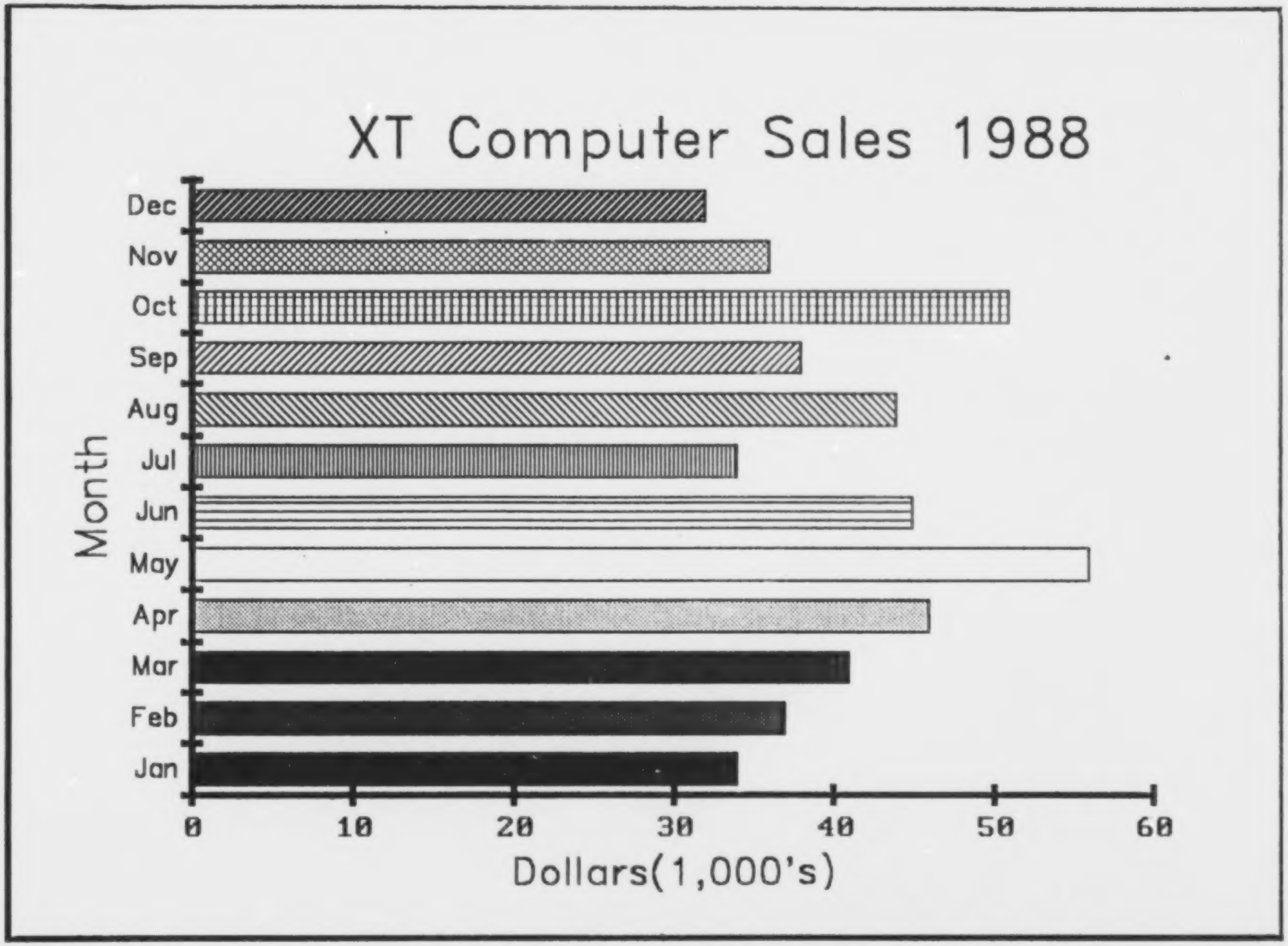


Figure 5. BAR GRAPH (HORIZONTAL)

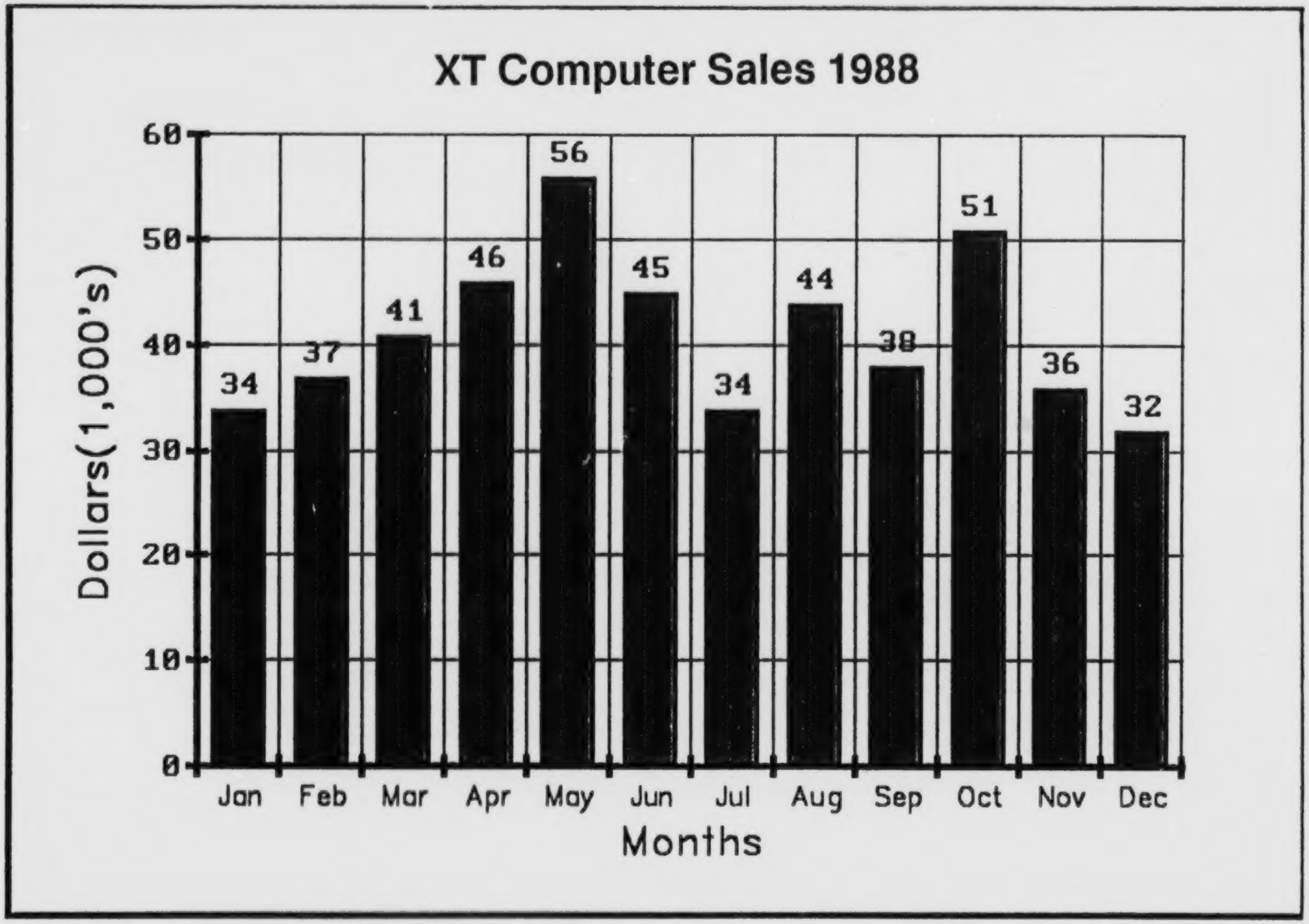


Figure 6. COLUMN GRAPH (VERTICAL)

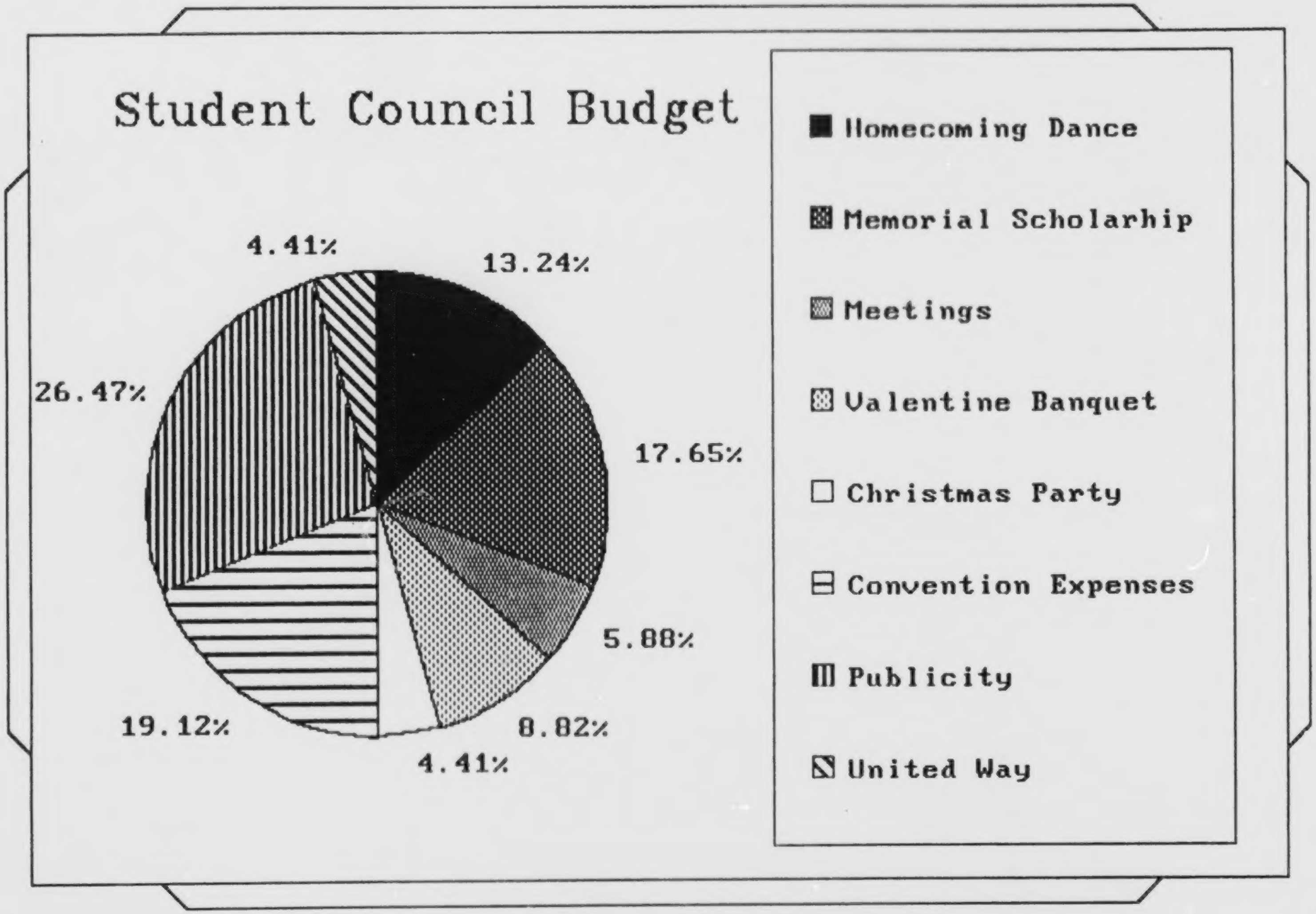


Figure 7. PIE GRAPH

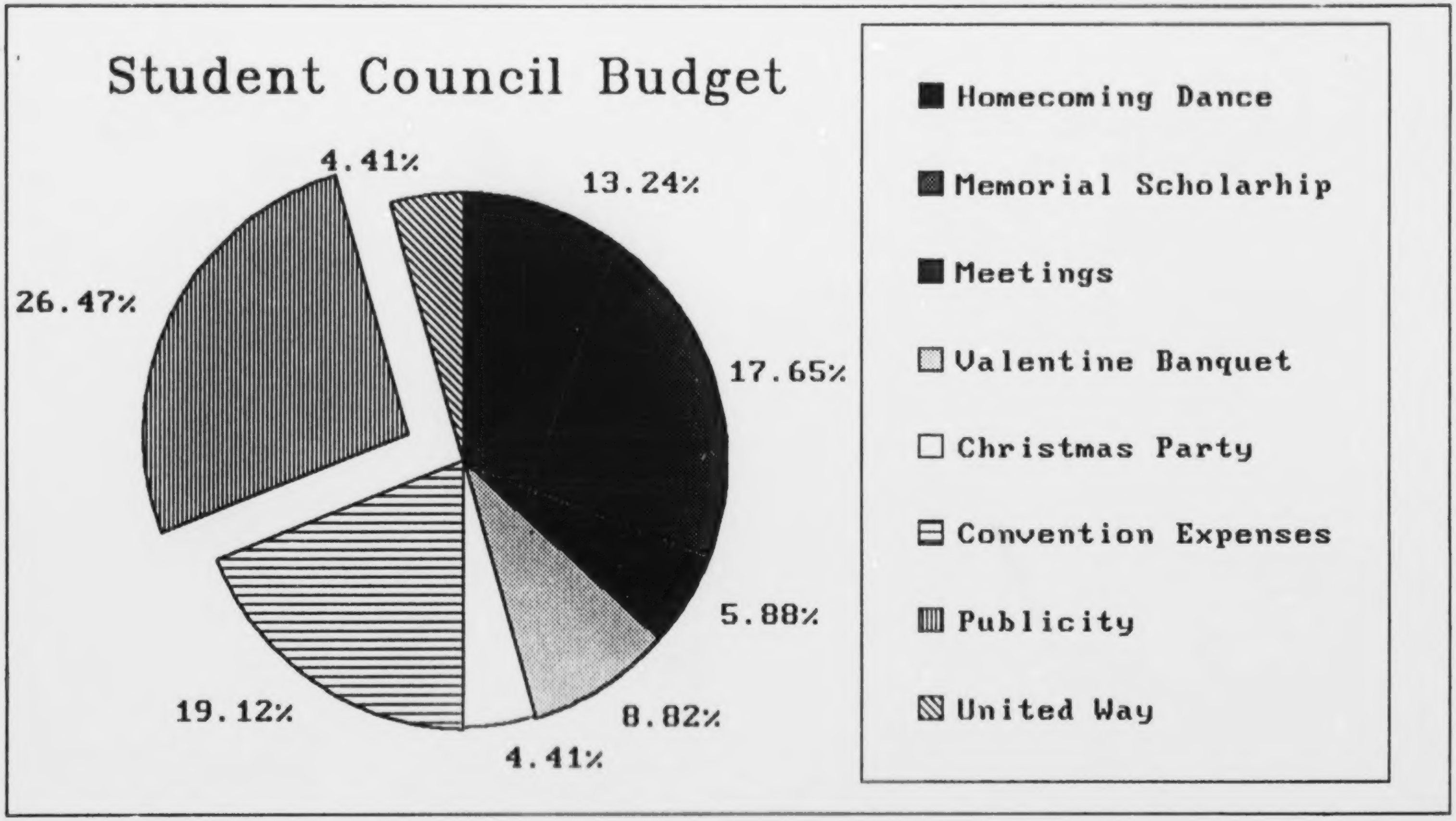


Figure 8. EXPLODED PIE GRAPH

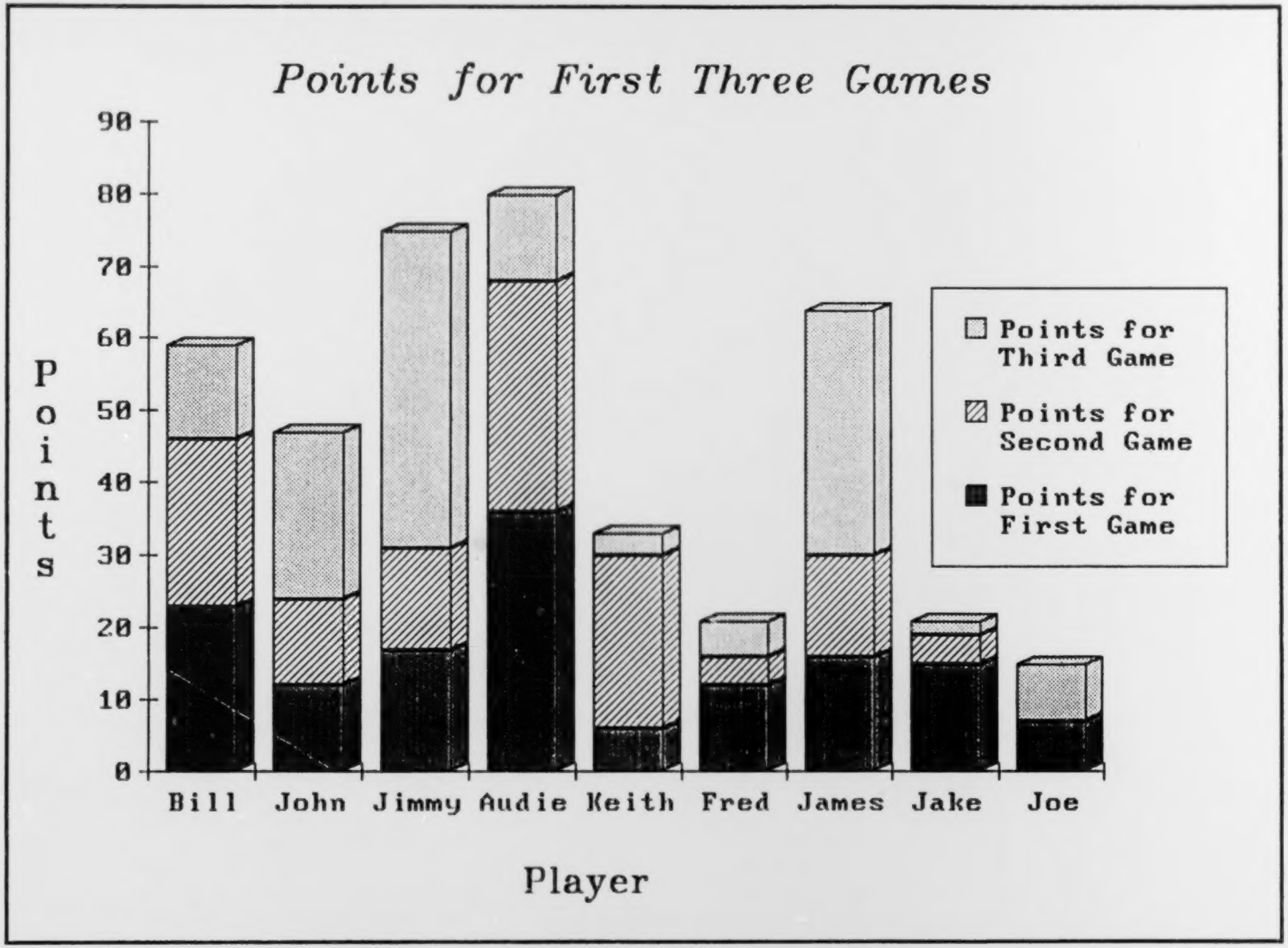


Figure 9. STACKED BAR GRAPH

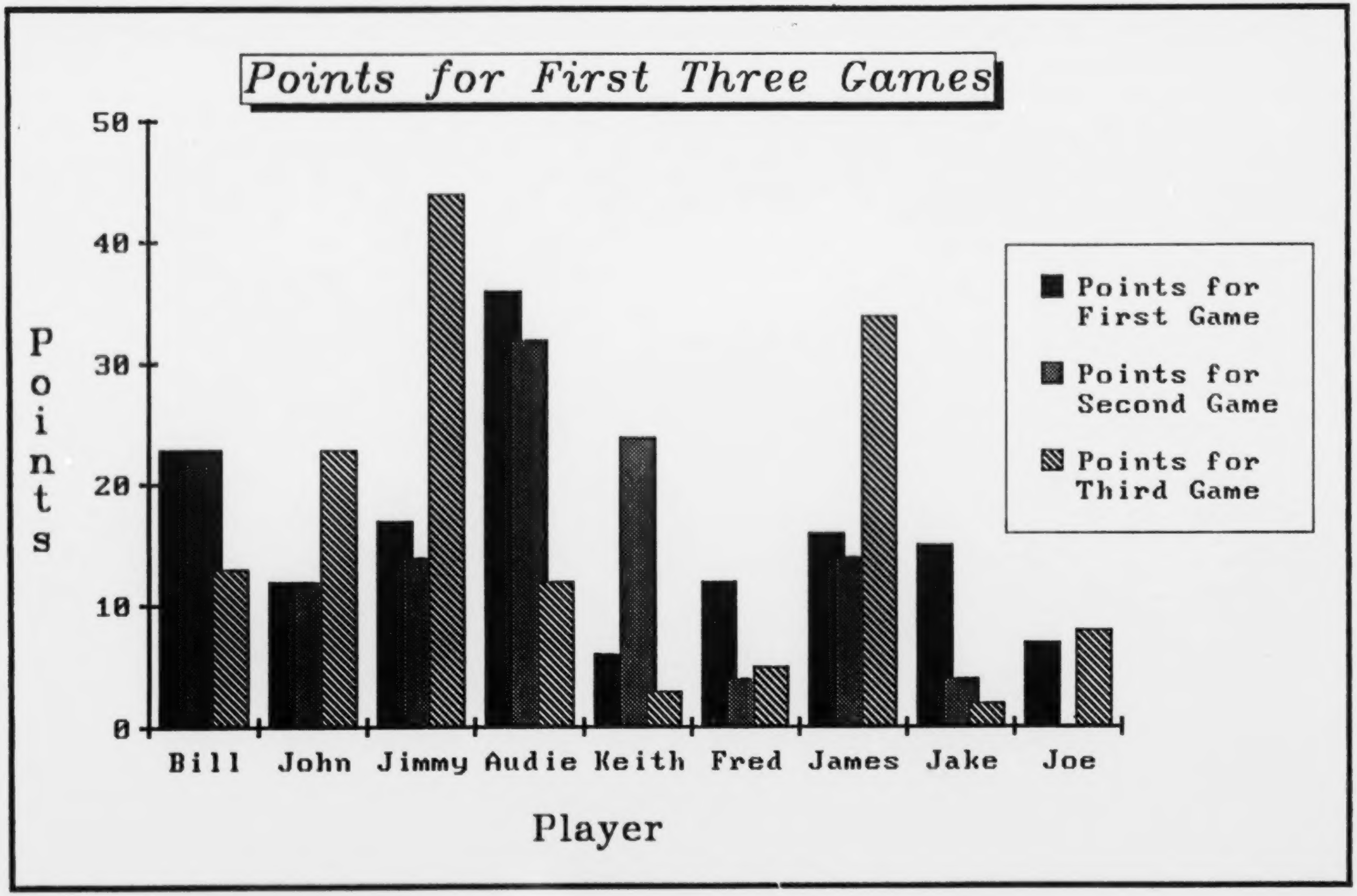


Figure 10. CLUSTERED BAR GRAPH

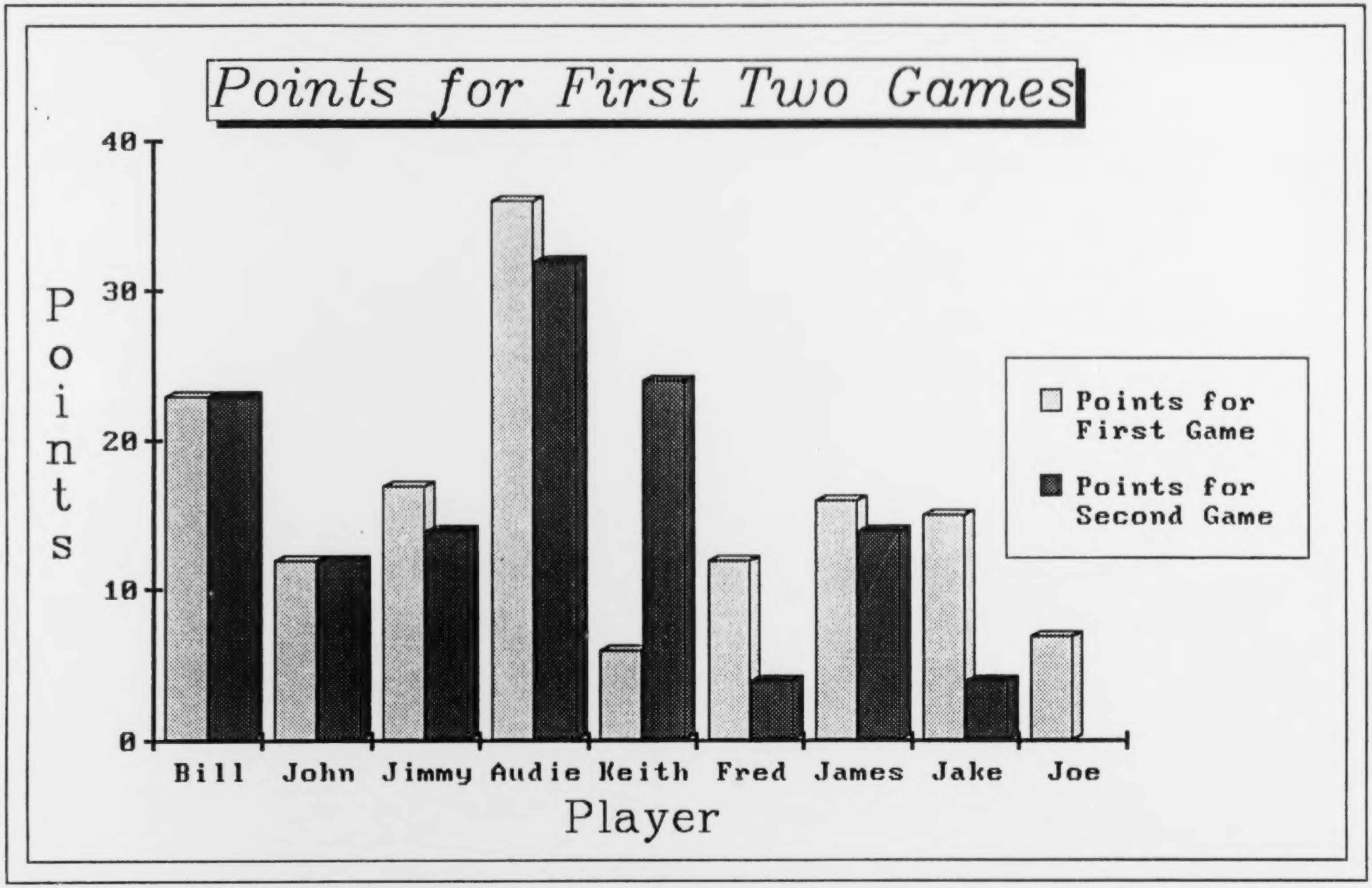


Figure 11. 3-D BAR GRAPH

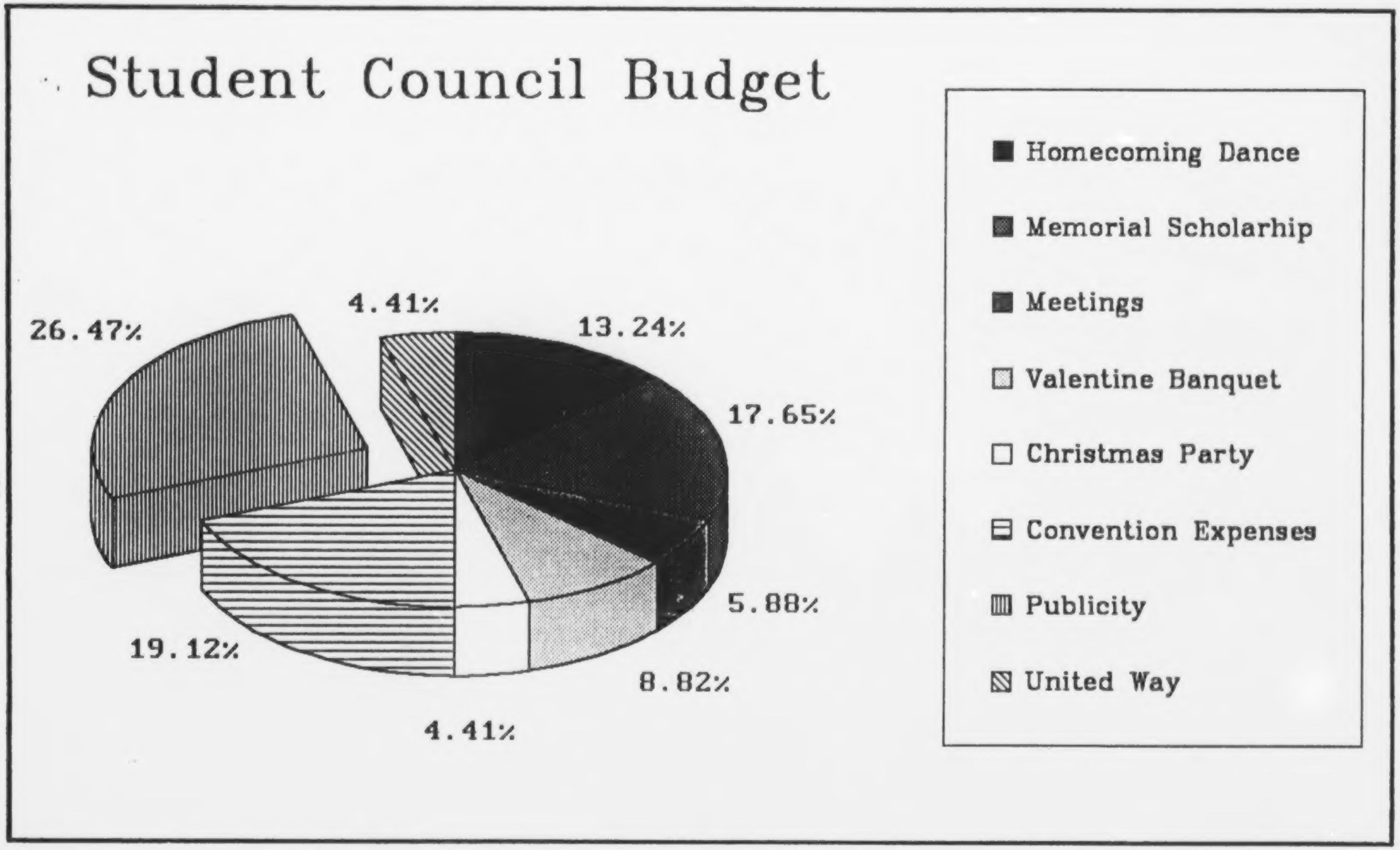
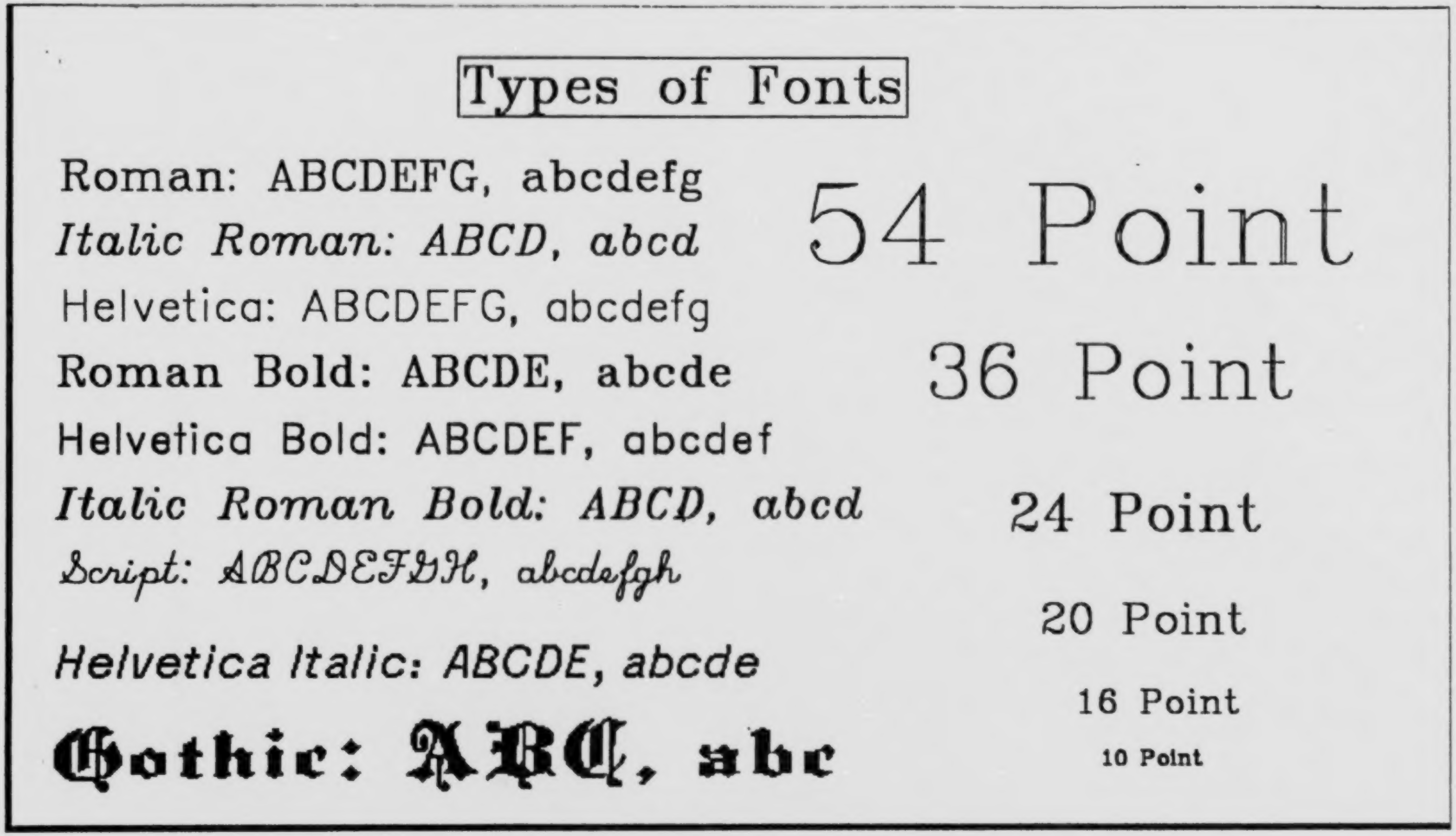


Figure 12. 3-D PIE GRAPH



Types of Fonts

Roman: ABCDEFG, abcdefg

Italic Roman: ABCD, abcd

Helvetica: ABCDEFG, abcdefg

Roman Bold: ABCDE, abcde

Helvetica Bold: ABCDEF, abcdef

Italic Roman Bold: ABCD, abcd

Script: ABCDEFGH, abcdefgh

Helvetica Italic: ABCDE, abcde

Gothic: ABC, abc

54 Point

36 Point

24 Point

20 Point

16 Point

10 Point

Figure 13. FONTS AND TYPE SIZES

COMPETENCY TEST

Project 1

INSTRUCTIONS: Complete the questions below by filling in the blanks, identifying or defining terms, or answering questions.

1. Most of us rely on our ________________ for information.
2. The average person speaks only about _______ words per minute.
3. Describe why it is now practical for businesses to do their own computer graphics.
4. Define computer graphics.
5. What is the primary use of graphics in business?
6. Name three spreadsheet programs with graphic capabilities.
    1.
    2.
    3.
7. Many programs have ____________________ settings that allow graphs to be drawn automatically, without additional input from the user.
8. Define presentation graphics and free-drawing graphics and give an example of each.

9. Define x-axis.

10. Define y-axis.

11. _____________ coordinates have a horizontal x-axis and a vertical y-axis used to plot relative points on a plane.

12. ______________ a point means to assign it a position according to the value the point represents in the x- and y-scales.

13. Symbols appearing beside lines in text charts are called ______________ and are used to give emphasis.

14. _____________ is measured in points.

15. A ______________ is 1/12 of a pica, or 1/72 of an inch.

16. A ______________ refers to a specific style of lettering.

17. Most professionals agree that it is essential to __________ fonts, colors, type sizes, and words.

18. Bar and pie graphs should not have more colors than they have __________ or __________.

19. Bar and pie graphs should use a __________ color for their most important section.

20. In bar and pie graphs, the same color should not be used for the ______________ that was used for a bar or section in the graph.

21. How many colors, fonts, and typesizes should be used in a text chart?

22. __________________ is the best background color for printed material.

23. __________________ is the best background color for slide presentations.

24. Name two advantages of printing charts and graphs in black and white, rather than color.

25. A graphic representation of a computer program is called a ___________________________.

26. Name three devices for entering points on the computer screen.

    a.

    b.

    c.

27. What is the difference between soft copy output devices and hard copy output devices.

28. For a monitor to be an effective display device, it needs to have a very high ________________.

29. Define resolution.

30. What color are pixels in color monitors?

31. Name the four IBM compatible monitor types, in order of resolution from the lowest to the highest.

    a.

    b.

    c.

    d.

32. How many colors can a VGA monitor display at once?

33. Name three of the four types of printers, in order of print quality.

    a.

    b.

    c.

    d.

34. What is the difference between a drum plotter and a flatbed plotter?

35. What are two coprocessors that can be used to speed up graphics programs on computers?

Project 2

INSTRUCTIONS: Using the graphics software available, complete the graphic assignments provided by your teacher.

Project 3

INSTRUCTIONS: Label the following parts on the graph provided by your teacher.

1. Tick marks
2. Grid lines
3. Tags
4. X/Y-axes titles
5. Icons
6. Legend
7. Title

415

Project 4

INSTRUCTIONS: Identify the following graphs provided by your teacher.

1. Scattergraph
2. Line graph
3. Area graph
4. Horizontal bar graph
5. Vertical bar graph
6. Gantt chart
7. Pie graph
8. Exploded pie graph
9. Stacked bar graph
10. Clustered bar graph
11. Three-dimensional graph

Project 5

INSTRUCTIONS: Complete graphics projects assigned by your instructor.

ANSWERS TO ACTIVITIES

Activity 1

```
     P    G S    C
    FREEDRAWING  O
     E    N G R  M
  BARS    T H A  P
   R E S  T T P  U
   E N C     CHART
   A T A      I  E
 B  CARTESIAN C  R
 U   T T   C  S  G
 L  LINE   C     R
 L   O R G U    TAG
DECLINE  R R P   P
 T E   ANIMATION H
 S G L   D C X   I
   EXCEL   Y E   C
   N D   P   LOTUS
   D     I   S
    STACKED
```

Activity 2

Project 1

1.	K	6.	A	11.	E	16.	Y
2.	W	7.	Q	12.	T	17.	G
3.	B	8.	L	13.	R	18.	M
4.	D	9.	U	14.	N	19.	X
5.	C	10.	S	15.	V	20.	O

Project 2 Evaluated to the satisfaction of the instructor.

Activity 3

Project 1 Bar and pie graph considerations--any three of the following:

1. Use only the colors needed for the number of sections or bars in the graph.
2. Use a bright color for the most important section.
3. Use different colors for the title and bars or sections in the graph. If all the bars represent the same thing, use the same color.

Text chart considerations--two of the following:

1. Use only three colors, and two is usually enough.
2. Use three or fewer fonts.
3. Use three or fewer typesizes.

Project 2

1. Use a neutral or white background for printed material.
2. A black or dark-colored background will provide more contrast and a more visible image for slide presentations.
3. Photocopies may be easily reproduced and distributed when printed in black and white rather than color.
4. They can be used to make transparencies, and then one can add color with an opaque marker.
5. Black and white copies are less expensive to print and reproduce than color copies.

Activity 4 Answers will vary according to the lecture and reference book used. However, answer should include the following:

Presentation graphic programs are used to illustrate information imported from business-related programs. Graphics as part of spreadsheet or graphics programs are examples.

Free-drawing graphics do not require a specific structure for the information they illustrate. Paint and draw programs are examples.

Activities 5-9 Answers will vary according to the instructions provided by the instructor. Evaluated to the satisfaction of the instructor.

COMPETENCY TEST ANSWERS

Project 1

1. Sight
2. 100
3. Professionals now find it practical to do their own graphics because of the introduction of faster microcomputers and because of the price decline of high resolution monitors and output devices.
4. Computer graphics is the technique of using computers to prepare visual presentations of information.
5. To interpret data from spreadsheets.
6. *Quattro, Excel, Lotus 1-2-3* (Answers many vary.)
7. Default
8. **Presentation graphics** are graphic programs that are used to illustrate information imported from business-related programs. Graphics as part of spreadsheet or graphics programs are examples.

   Free-drawing graphics programs do not require a specific structure for the information that they illustrate. Paint and draw programs are examples.

9. The horizontal line along the bottom of a graph which usually represents units of time.

10. The vertical line in a graph which usually represents different values of the items being measured.
11. Cartesian
12. Plotting
13. Bullets
14. Typesize
15. Point
16. Font
17. Limit
18. Sections or bars
19. Bright
20. Title
21. No more than three
22. Neutral or white
23. Black or dark-colored
24. Any two of the following:

    1. Photocopies may be easily reproduced and distributed when printed in black and white rather than color.
    2. They can be used to make transparencies, and then one can add color with an opaque marker.
    3. Black and white copies are less expensive to print and reproduce than color copies.

25. Flow chart

26. a. Mice
    b. Light pens
    c. Digitizing tablets

27. Soft copy output devices display information electronically without printing output on paper or film.

    Hard copy output physically prints the data on a piece of paper or film.

28. Resolution
29. The number of dots used to make up an image
30. Red, green, and blue

31. a. CGA
    b. EGA
    c. Hercules monochrome
    d. VGA

32. 256 colors

33. a. Dot-matrix
    b. 24-pin, dot matrix

c. Ink-jet
d. Laser

34. Drum plotters move the paper on a rotating drum under the pen to control vertical travel.

    Flatbed plotters hold the paper flat on a horizontal surface, and the pen moves in both directions.

35. The math and graphics coprocessors

Projects 2-5 Evaluated to the satisfaction of the instructor.

COMPETENCY CHECKLIST

ESSENTIAL ELEMENT: 75.87(e)(5)(D)

The student will be provided opportunities to identify tools for preparing information for mass distribution including desktop publishing, graphics, and maintenance of electronic bulletin boards.

OBJECTIVE: Students will demonstrate comprehension of the graphic representation of data, execute graphs for specific data sets, and discuss the applications of computer graphics.	MASTERY	NON-MASTERY
1. Define and use graphics-related terminology.	______	______
2. Describe basic graphic concepts.	______	______
3. Discuss important graphic design concepts.	______	______
4. Discuss the differences between presentation and free-drawing graphics.	______	______
5. Match different types of graphs with types of information appropriate for demonstration with those graphs.	______	______
6. Match different types of graphics hardware with graphics applications appropriate for that hardware.	______	______
7. Outline and discuss several different applications for computer graphics.	______	______
8. Create several graphic images to represent a variety of information.	______	______
9. Identify tools for preparing information for mass distribution including graphics.	______	______

STUDENT NAME ____

SUGGESTED UNIT LESSON PLAN

SECTION V: COMPUTER COMMUNICATION TOOLS

UNIT III: DESKTOP PUBLISHING

ESSENTIAL ELEMENTS: 75.87 (e)(5)(D)

ALLOCATED TIME: 5 Hours

UNIT OBJECTIVE: Students will be able to prepare a document using desktop publishing techniques.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Identify desktop publishing terms.
2. Define the basic goal and historical development of desktop publishing.
3. Compare methods of traditional publishing and desktop publishing.
4. Describe the components of desktop publishing.
5. Discuss various software programs used in desktop publishing.
6. List eight basic areas of planning to consider when preparing a graphics document for desktop publishing.
7. List the guidelines for working with various graphic representations.
8. Demonstrate the tools and procedures for producing documents using available desktop publishing procedures.

FOCUS: Desktop publishing technology is becoming a very important application in today's office. A working knowledge of this technology enhances opportunities for the beginning office worker.

DOMAINS: Activities and competency tests have been designed to provide learning experiences utilizing the cognitive, psychomotor, or affective domains. Activities and competency tests are coded on the Activity and Competency Test Matrices.

BASIC SKILLS: Activities and competency tests have been designed to reinforce the basic skills of reading, writing, and/or mathematics. Activities and competency tests have been coded on the Activity and Competency Test Matrices.

CONTENT OUTLINE

I. Defining desktop publishing
    A. Meaning of desktop publishing
    B. Goal of desktop publishing
    C. History of desktop publishing

II. Comparison of traditional and desktop publishing procedures
    A. Traditional publishing
    B. Desktop publishing

III. Components of desktop publishing
    A. Hardware
    B. Software

IV. Deciding on a desktop publishing system
    A. Factors to consider
    B. What DTP system will do for the user
    C. Benefits and disadvantages of desktop publishing
    D. Assembling a system

V. Operational procedures
    A. Plan publication
    B. Design document's appearance
    C. Create text and graphics
    D. Use style sheets
    E. Manipulate document on the screen
    F. Use page layout software
    G. Print the document

SUGGESTED TEACHER ACTIVITIES

General Teacher Preparation

1. Preview unit.
2. Review unit objectives.
3. Make instructional analysis.
4. Assess student learning needs.
5. Decide on lesson domain: cognitive, psychomotor, or affective domain.
6. Select instructional materials based on instructional analysis and student learning needs.
7. Select instruction strategies based on lesson content and student learning needs.
8. Prepare lesson plans from the unit lesson.
9. Prepare additional instructional material.
10. Reserve necessary media and equipment.

Teacher Presentation

1. Present student objectives.
2. Establish rapport with students.
3. Review lesson objectives with students.
4. Relate lessons to prior or future learning.
5. When appropriate, encourage student interaction through questioning, discussions, or some other strategy.
6. Emphasize the value/importance of the unit activity.
7. Allow time for closure of a lesson.

Reteach Activities

1. Identify area(s) of weakness from results of evaluation.
2. Select unit activities not previously used.
3. Use additional resources and/or create materials based on student learning needs.
4. Use a different teaching strategy in reteaching.
5. Retest.

Specific Teaching Suggestions

NOTE: **This unit is basically the same in several EDTC curricula. Please feel free to vary the activities or provide advanced activities for students who have already completed the desktop publishing unit in another course.**

1. Become familiar with the software that will be used--word processing, graphics, and desktop publishing. Make sure that all software is compatible.
2. Make up a file of samples brochures, catalogs, and reports that were, or could have been, produced by desktop publishing.
3. Examine the terms listed in this unit, and add any additional terms to the list that are needed for working with the particular software that will be used in class.
4. Compile a list of possible class, individual, or desktop publishing school projects that might be used. This list can be expanded with suggestions from students during class discussion.
5. Plan a lecture on the characteristics and terminology of the publishing industry.
6. Prepare a demonstration of the steps in putting together a simple publication.
7. Make arrangements to take a tour of a local, traditional print shop in your community to see the steps in printing. Or, have a printer speak to the class, describing the steps.
8. Plan a visit to an office where extensive desktop publishing is done.
9. If preferred, and hardware and/or software is not available, arrange to substitute word processing and graphics programs to teach the concepts.

ACTIVITY MATRIX

Activities	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
1	X			X		
2 Project 1	X				X	
Project 2	X				X	
3	X				X	
4 Project 1	X				X	
Project 2	X			X	X	X
5	X				X	
6 Project 1	X				X	
Project 2	X		X	X	X	
7	X				X	
8 Project 1	X	X	X		X	
Project 2	X	X	X		X	
Project 3	X	X	X		X	
Project 4	X	X			X	

COMPETENCY TEST MATRIX

Parts	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
I	X			X		
II	X				X	
III	X			X		
IV-V Project 1	X			X		
Project 2	X				X	
VI-VIII	X	X		X	X	

COMPETENCY TEST

PART I: TERMINOLOGY

INSTRUCTIONS: Provide the correct term to match the appropriate definition.

______________________ 1. The ability to wrap text around graphic images on a page layout.

______________________ 2. A copy of a photograph or scanned document that is digitized and stored in memory or on disk.

______________________ 3. A design template that divides a page with imaginary vertical and horizontal lines as an aid to placing and aligning type and graphic elements.

______________________ 4. The process of changing the size of an image but not the proportions. Also known as sizing.

______________________ 5. The final copy of a document, including graphics.

______________________ 6. The written element of a publication, including text, captions, and headlines; also refers to reproducing files, documents, or parts of documents.

______________________ 7. A typeset and formatted draft used for proofreading copy.

______________________ 8. A graphic device which permits a command to be selected by using a mouse.

______________________ 9. One of the many sizes and styles of type that may be available for printing.

______________________ 10. A rule or linear design that surrounds any element of a page.

______________________ 11. An acronym referring to software that is valuable in doing drawings or designs.

______________________ 12. Similar to justification, but more inclusive when working with multiple columns.

______________________ 13. Art or printed material that is ready to be photographed by the printer.

______________________ 14. Cutting off parts of an image or drawing to make it fit, or to show only selected areas.

______________________ 15. The imaginary horizontal line on which characters on a line of type rest.

______________________ 16. A collection of handy drawings stored on disk that can be inserted into a document.

______________________ 17. The techniques of extending art or text in any direction over the edge of a page.

______________________ 18. A temporary storage place for text or graphics.

______________________ 19. Small black circles or other characters used in the margin to call attention to a portion of text.

______________________ 20. A mock layout showing placement of art and text.

PART II: GOAL AND HISTORICAL DEVELOPMENT OF DESKTOP PUBLISHING

INSTUCTIONS: **Describe the goal of desktop publishing and prepare a timeline of the development of desktop publishing.**

Goal:

Timeline:

PART III: COMPARISON OF TRADITIONAL PUBLISHING AND DESKTOP PUBLISHING METHODS

INSTRUCTIONS: **Classify each of the following procedures as to whether they are T--traditional procedures or D--desktop publishing procedures.**

________ 1. Utilize computers for many processes.

________ 2. A graphic designer designs the publication.

________ 3. Project developer selects appropriate paper and inks.

________ 4. A paste-up artist assembles all the elements into camera-ready copy for the printer.

________ 5. Require one to understand the printing process, including how to handle photographs.

________ 6. A typesetter sets the type.

________ 7. A camera operator creates halftone screens.

________ 8. Person in charge of the process writes and edits the documents.

________ 9. Project manager designs the document, including selection of layout, typeface, and graphic elements.

________10. A proofreader checks the copy.

________11. Proofread by process manager.

________12. Writer and editor create and shape the content.

________13. Document creator selects appropriate binding process.

PARTS IV-V: COMPONENTS OF DESKTOP PUBLISHING

Project 1

INSTRUCTIONS: **Match each item of desktop publishing hardware with its description.**

DESCRIPTION

_____ 1. Memory size of 512K or 40MB hard disk
_____ 2. Shows an entire 8 1/2" by 11" page
_____ 3. Has a page description language
_____ 4. Monochrome graphics monitor
_____ 5. Closed architecture
_____ 6. Makes a page look like typeset copy
_____ 7. Images are transferred directly to a computer disk
_____ 8. Low-end color monitor, inadequate for DTP
_____ 9. Open architecture makes it easy to upgrade
_____ 10. A monitor where two pages can be displayed at once
_____ 11. A pointing device
_____ 12. Has the best color resolution at this time

HARDWARE

A. IBM or compatible
B. Macintosh
C. CGA
D. VGA
E. Full-page
F. Laser printer
G. Hewlett Packard printer
H. Scanner
I. Mouse
J. Hercules
K. Double-page
L. Computer requirements

PARTS IV-V (Continued)

Project 2

INSTRUCTIONS: Write your recommendations as to the best software and hardware components to set up your ideal desktop publishing system. Give your reasons for making the selections.

PARTS VI-VIII: PREPARING A DESKTOP PUBLISHING DOCUMENT

INSTRUCTIONS: Prepare a desktop publishing document applying planning techniques and graphic guidelines that you have learned. Make sure and have your idea approved by your teacher before you begin.

ANSWERS TO ACTIVITIES

Activity 1

```
  H   F    A       W
 DESKTOPPUBLISHING H
  A   R    I       I
WIDOW M  P GRID    T
  E   A  O N       E
 PROMPT  R M   T
  S      T E   Y
         R N   P   W
     CLIPART  BORDER
 P    A  I     G   A
 ORPHANS T  C  R   P
 I A  D     R  A S
 N G  S  M  O  PICA
 T E  C  O  P  H A W
     LAYOUT    Y L Y
   L  P  S T     I S
  PASTE RESOLUTION I
   S       N     G W
   E   STYLESHEET  Y
  PROOF    R       G
```

Activity 2

Project 1

The term desktop publishing actually has no real meaning. However, *desktop* infers that the user can design a document at a computer on his/her desk, and *publish* infers that the document produced can serve as final output. Some think a better name may be *page processing*. Other names for desktop publishing are *personal*, *in-house*, or *page publishing*.

Project 2

1. First came the printing of books upon demand--involved scribes that copied books by hand. This process took more than two years to complete.
2. Gutenberg invented the printing press, thus allowing books to be created less expensively and with much greater speed.
3. The printing process became more defined through the 19th-20th centuries
   a. 1960s--computers with page composition and phototypesetting
   b. 1960--IBM introduced word processing
   c. Birth of desktop publishing in the mid 1980s--brought publishing to the masses
   d. Steven Jobs is credited with the creation of desktop publishing.

Activity 3

Traditional:

1. Writer and editor create and shape the content.
2. Graphic designer designs the publication.
3. Typesetter sets the type.
4. Proofreader checks the copy.
5. Camera operator creates halftone screens.
6. A paste-up artist assembles all the elements into camera-ready copy for the printer.

Desktop--One person in charge of the entire project:

1. Writes and edits the document.
2. Designs the document layout, typeface, and graphic elements.
3. Proofreads.
4. Understands the printing process, including how to handle photographs.
5. Selects appropriate paper and ink.
6. Selects appropriate binding process.
7. Utilizes computers for many of the above processes.

Activity 4

Project 1

Hardware components	Software components
1. Computer	1. Word processing
2. Printer	2. Graphics
3. Monitor	3. Page makeup
4. Mouse	
5. Image scanner	
6. Disk storage	

Project 2 Evaluated to the satisfaction of the instructor.

Activity 5 Evaluated to the satisfaction of the instructor.

Activity 6

Project 1

1. Decide what messages will be communicated.
2. Decide on the audience.
3. Decide on the most effective format and means of receiving the document.

4. Check for consistency in document appearance.
5. Decide on the length of the document, and the number of copies that need to be made.
6. Decide on the number of illustrations and their appropriateness with the text copy.
7. Check on the amount of money allocated for the document.
8. Decide on the document's emphasis.

Project 2 Evaluated to the satisfaction of the instructor.

Activity 7

Project 1

1. Charts and diagrams may be designed for specific audiences and should be well labeled and provide additional explanations when necessary.
2. Keep the amount of information in a diagram to a minimum.
3. Decide on the most effective format and means of receiving the document.
4. Check for consistency in document appearance.
5. Decide on the length of the document, and the number of copies that need to be made.
6. Decide on the number of illustrations and their appropriateness with the text copy.
7. Check on the amount of money allocated for the document.
8. Decide on the document's emphasis.

Activity 8 Evaluated to the satisfaction of the instructor.

COMPETENCY TEST ANSWERS

Part I

1. Wrap
2. Image
3. Grid
4. Scaling
5. Proof
6. Copy
7. Galley
8. Dialog box
9. Font
10. Border
11. CAD
12. Alignment
13. Camera-ready art
14. Cropping
15. Baseline
16. Clip art
17. Bleed
18. Clipboard
19. Bullets
20. Dummy

Part II The primary goal of desktop publishing is the production of a page. The page consists of type, graphics, and other design elements that are integrated together to make a whole. Answers will vary according to the information provided in the lecture.

Part III

1. D
2. T
3. D
4. T
5. D
6. T
7. T
8. D
9. D
10. T
11. D
12. T
13. D

Parts IV-V

Project 1

1. L
2. E
3. G
4. J
5. B
6. F
7. H
8. C
9. A
10. K
11. I
12. D

Project 2 Evaluated to the satisfaction of the instructor.

Parts VI-VIII Evaluated to the satisfaction of the instructor.

COMPETENCY CHECKLIST

ESSENTIAL ELEMENT: 75.87(e)(5)(D)

The student shall be provided opportunities to identify tools for preparing information for mass distribution including desktop publishing, graphics, and maintenance of electronic bulletin boards.

OBJECTIVE:	Students will be able to prepare a document using desktop publishing techniques.	MASTERY	NON-MASTERY
1.	Identify desktop publishing terms.		
2.	Define the basic goal and historical development of desktop publishing.		
3.	Compare methods of traditional publishing and desktop publishing.		
4.	Describe the components of desktop publishing.		
5.	Discuss various software programs used in desktop publishing.		
6.	List eight basic areas of planning to consider when preparing a graphics document for desktop publishing.		
7.	List the guidelines for working with various graphic representations.		
8.	Demonstrate the tools and procedures for producing documents using available desktop publishing procedures.		

STUDENT NAME ____

SUGGESTED UNIT LESSON PLAN

SECTION V: COMPUTER COMMUNICATION TOOLS

UNIT IV: BUSINESS APPLICATION SOFTWARE

ESSENTIAL ELEMENT: 75.87 (e)(5)(A)

ALLOCATED TIME: 5 Hours

UNIT OBJECTIVE: Students will use various utility and productivity programs to enhance their use of the computer.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Define utility programs.
2. Identify the use of several utility programs.
3. Use utility programs to enhance computer management techniques.
4. Identify and describe various types of productivity software.
5. Load, access, and use two productivity programs.

FOCUS: Manipulating data in various ways is generally accomplished through typical application programs. However, there are needs for disk management procedures, methods of retrieving lost data, and ways of saving time that make the worker more productive.

DOMAINS: Activities and competency tests have been designed to provide learning experiences utilizing the cognitive, psychomotor, or affective domains. Activities and competency tests are coded on the Activity and Competency Test Matrices.

BASIC SKILLS: Activities and competency tests have been designed to reinforce the basic skills of reading, writing, and/or mathematics. Activities and competency tests have been coded on the Activity and Competency Test Matrices.

CONTENT OUTLINE

I. Utility programs
   A. Characteristics
   B. Print spoolers
   C. RAM disks
   D. Keyboard enhancers
   E. Other utility programs

II. Productivity programs
   A. Project management
   B. Desktop managers
   C. Idea processor

SUGGESTED TEACHER ACTIVITIES

General Teacher Preparation

1. Preview the unit.
2. Review unit objectives.
3. Make instructional analysis.
4. Assess student learning needs.
5. Decide on lesson domain: cognitive, psychomotor, or affective domain.
6. Select instructional materials based on instructional analysis and student learning needs.
7. Select instructional strategies based on lesson content and student learning needs.
8. Prepare lesson plans from the unit lesson.
9. Prepare additional instructional material.
10. Reserve necessary media and equipment.

Teacher Presentation

1. Present student objectives.
2. Establish rapport with students.
3. Review lesson objectives with students.
4. Relate lesson to prior or future learning.
5. When appropriate, encourage student interaction through questioning, discussions, or some other strategy.
6. Emphasize the value/importance of the unit or activity.
7. Allow time for closure of a lesson.

Reteach Activities

1. Identify area(s) of weakness from results of evaluation.
2. Select unit activities not previously used.
3. Use additional resources and/or create materials based on student learning needs.
4. Use a different teaching strategy in reteaching.
5. Retest.

Specific Teaching Activities

1. Select several utility packages that are representative of the areas covered in the unit, as well as utilities not covered in the unit.

2. The utilities area may be new to you, so take some time and work on each utility package. Several utilities may come in one package, and generally the cost for these packages is relatively low--less than $50. If you know someone who is in a user group, he/she may be able to assist you in securing copies of public domain programs, which are very inexpensive.

3. User group members, parents of your students, and even the students themselves may be very helpful in this unit. They could demonstrate the various types of utilities they have which may vary from what you have secured.

4. Secure copies of several productivity programs. Check a listing of public domain software for titles.

5. Make computer periodicals and newspapers available for student use.

Activity 1

Project 2	Assign each student a particular periodical to use in preparing his/her tests. Have a class discussion comparing their findings.
Activity 3	Provide students with a utility program, and have them perform tasks you assign which are specific to that package. You may wish to rotate students on three or four utilities so they have the opportunity to work on each one.
Activity 5	Provide instructions and two productivity software packages for students to use.
Competency Test	Provide students with a utility program and instructions for tasks to be performed. Provide a productivity program and instructions for tasks students are to demonstrate. The competency test covers the entire unit.

ACTIVITY MATRIX

Activities	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
1 Project 1	X				X	
Project 2	X			X	X	
2	X			X		
3	X	X		X	X	
4 Project 1	X			X		
Project 2	X			X	X	
5	X	X		X	X	

COMPETENCY TEST MATRIX

Parts	**Domains**			**Basic Skills**		
	Cognitive	**Psycho-motor**	**Affective**	**Reading**	**Writing**	**Math**
All	X	X		X	X	

COMPETENCY TEST

INSTRUCTIONS: Complete the following.

1. Define utility programs.

2. List and describe four utility programs that you found in your research.

   a.

   b.

   c.

   d.

3. Describe what each of the following types of utility programs do, and give an example of a program name for each one.

   Enhanced keyboard

   Keyboard macros

   File indexes

   File-conversion

Print spoolers

Copy-protection

File-recovery

File-encryption

RAM disk

4. Using a utility program and instructions provided by your teacher, perform a utility function.

5. Describe three characteristics for each of the following productivity programs.

   a. Idea processor

      (1)

      (2)

      (3)

   b. Desktop managers

      (1)

      (2)

      (3)

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c. Project managers

(1)

(2)

(3)

6. List three sample software programs for each type of productivity program.

Idea processor
a.

b.

c.

Desktop managers
a.

b.

c.

Project managers
a.

b.

c.

7. Load, access, and use two productivity programs provided by your teacher, using the instructions provided.

ANSWERS TO ACTIVITIES

Activity 1

Project 1

Brief, inexpensive, single-task programs that perform various useful functions that allow the computer to work faster and more efficiently.

Project 2 Evaluated to the satisfaction of the instructor.

Activity 2

1. H
2. D
3. C
4. B
5. A
6. I
7. F
8. E

Activity 3 Evaluated to the satisfaction of the instructor.

Activity 4

Project 1

1. Project management
2. Desktop managers
3. Idea processing
4. Desktop managers
5. Project management
6. Desktop managers
7. Desktop managers
8. Project management
9. Idea processing
10. Idea processing

Project 2 Evaluated to the satisfaction of the instructor.

Activity 5 Evaluated to the satisfaction of the instructor.

COMPETENCY TEST ANSWERS

1. Brief, inexpensive, single-task programs that perform various useful functions that allow the computer to work faster and more efficiently.

2. Evaluated to the satisfaction of the instructor.

3. **Keyboard enhancers** are used to customize the computer keyboard. They redefine the original use or meaning of keys. Can redefine all of the keys, changing the keyboard from the typical QWERTY design to a DVORAK design.

   Keyboard macros assign a series of keystrokes to a single key to save time. File can be saved so that it can be repeated; sometimes saved as files in themselves, so the macros can be utilized without programs.

   File indexes are used to print out lists of files stored on disks. They list files in sorted order.

   File-conversion programs convert files created on one program or operating system so that they can be run on another.

   Print spoolers provide a partial solution to save computer time when printing out long files. They designate a part of the computer's memory as a print buffer.

   Copy-protection programs ensure that a disk cannot be copied by other users.

   File-recovery programs restore files that have been inadvertently deleted from a disk.

   File-encryption programs can encrypt, or encode, data stored on disks or transmitted over telephone lines so that it cannot be retrieved by users without a password.

   RAM disks software set aside a part of the computer's memory for the storage of programs and data files.

4. Evaluated to the satisfaction of the instructor.

5. a. **Idea processor** (any three)
      (1) Is similar to jotting down notes.
      (2) Reorganizes ideas and topics.
      (3) Combines related topics.
      (4) Breaks page topics into sections.
      (5) Easy to add or delete topics.

   b. **Desktop managers** (any three)
      (1) Serves as a personal productivity tool.
      (2) Contain calendars, notebooks, and calculators.
      (3) Accessed while in another program.

(4) Combine different functions.
(5) Personalize computer for the user.

c. **Project managers** (other answers may be correct)
(1) Answer difficult questions.
(2) Little expertise is needed to operate these programs.
(3) Provide several means of improvement.

6. and 7. Evaluated to the satisfaction of the instructor.

RESOURCES

NOTE: There are several hundred utility programs available for Apple and IBM computers. These are just a small sample listing.

SOFTWARE

BEST OF UTILITIES--DISK ARRANGER, CATALOG
The Public Domain Exchange
2074C Walsh, Ste. 525
Santa Clara, CA 95050
Apple family

CRUISE CONTROL
Tiger Software
Speeds cursor.

CUBIT
Tiger Software
800 Douglas Entrance, 7th floor
Coral Gables, FL 33134
File compressor for hard or floppy disks.
IBM PC, PS/2 128K memory

DISKETTE MANAGER 3
Tiger Software
Organizes, creates labels, and produces reports for diskettes.

DUET
Tiger Software
Offers print spooling and sideways printing and laser support.
IBM PC, PS/2 256K memory

INTELLIGENT BACKUP
Tiger Software
IBM PC, PS/2 320K memory

POP DROP
Tiger Software
Removes and replaces RAM without rebooting the system.

SOFTWARE BRIDGE
Tiger Software
Converts documents from one word processing program to another.
IBM PC, PS/2 384K memory

SOFTWARE CAROUSEL
Tiger Software
Loads several programs at a time and switches between them.
IBM PC, PS/2 256K memory

TIMEOUT SERIES
Beagle Bros. Software
Nine programs that enhance AppleWorks program.
Apple family

TORNADO NOTES
Tiger Software
Provides pop-up notepad and indexer.

COMPETENCY CHECKLIST

ESSENTIAL ELEMENT: 75.87(e)(5)(A)

The students will be provided opportunities to discuss integration of people and computers for productivity.

OBJECTIVE: Students will use various utility and productivity programs to enhance their use of the computer.	MASTERY	NON-MASTERY
1. Define utility programs.	______	______
2. Identify the use of several utility programs.	______	______
3. Use utility programs to enhance computer management techniques.	______	______
4. Identify and describe various types of productivity software.	______	______
5. Load, access, and use two productivity programs.	______	______
	______	______
	______	______

STUDENT NAME ________________________________

SECTION V: COMPUTER COMMUNICATION TOOLS

UNIT I: TELECOMMUNICATIONS

UNIT OBJECTIVE: Students will use telecommunications terminology when discussing and describing basic telecommunications concepts involving modems, software, bulletin boards, and other related telecommunications areas.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Properly use and define basic telecommunications terminology.
2. Describe the development of telecommunications and its uses.
3. Contrast and compare three types of modems.
4. Explain typical features of microcomputer data communication software packages.
5. Discuss procedures for uploading and downloading information.
6. Describe the kinds and types of teleconferencing, including bulletin boards.
7. Identify concepts of networking.

FOCUS: Telecommunications is continuously growing in importance in the business world. As it continues to grow, so does the need for the beginning worker to have a working knowledge of basic telecommunications terminology and concepts.

TERMINOLOGY

Audioteleconference	A conference that, through the use of a bridge, allows from three people to hundreds to converse form different locations.
Acoustic coupler	A type of modem which uses a telephone handset to connect the phone line to the computer.
Baud rate	A measure of the number of bits per second transmitted.
Bulletin board	A computer with software and storage dedicated to communicating with other computers over telephone lines.
Channel	The connection between the sender and the receiver.
Common carrier	An organization, such as the telephone company, that is authorized by the FCC to offer communication services.
Distributed data processing	A system that has a central computer, but some processing is done at remote sites.
Download	To receive a data file from another computer.
E-mail	The transmission of data for electronic storage and subsequent retrieval.
Fiber optics	A means of transmission using glass fiber.
File	In telegraphic communication, this refers to the transmitting of a telegraphic message.
File server	The host computer in a network that coordinates communication and has central storage capability available to the network.
Front-end processor	A computer connected to a mainframe for the purpose of controlling (terminal controller) data input and output.
Full-duplex	A communication protocol which enables transmission of data two-ways at the same time.
Half-duplex	A communication protocol which allows transmission of data in only one direction at a time.
Handshaking	A process in which the receiving computer sends a signal to tell the sending computer that it is ready to receive data.
Hierarchical	A network configuration in which all stations are connected by one path to the central computer, but the paths are not connected to each other.

Host computer	The file server in a local network, or the mainframe in other networks.
LAN	An acronym for Local Area Network; a network that is limited to one room, building, or complex.
Microwave transmission	A channel for sending data by microwaves through a series of relay stations.
Modem	Short for modulator-demodulator, it connects the computer to the telephone system.
Modulation	Conversion of a signal from digital to analog.
Multistar	A network configuration in which mainframes, each with its own star network, are connected.
Operator-assisted call	Long-distance telephone call which requires help from the operator to complete the call.
Password	Coded identification required to access some bulletin boards and information services.
Point-to-point line configuration	Each terminal or work station is connected directly to the host.
Protocol	A set of rules for exchange of information between computers in a communication system.
Ring	A local area network in which the work stations are connected to each other, but without a central host.
Satellite transmission	Transmission using communication satellites.
Soft copy	Information appearing on a video screen or monitor.
Star	A network configuration in which a central computer is directly connected to each terminal.
Switched line	A line such as a normal telephone line.
Telecommunications	The electronic transmission of information, whether it is voice or data.
Teleconference	A conference conducted over the telephone among people in widely separated locations, or a conference among people at different locations linked electronically.
Teleprocessing	The exchange of data over cables and telephone lines between minicomputers and mainframes.

Terminal	An input-output device that is used to access data from a computer.
Time-sharing	Simultaneous access to a shared central computer facility by many users.
Token-ring	A type of ring network in which messages need not pass to adjacent stations.
UNIX	A popular operating system for microcomputers used in a multistation configuration.
Upload	To send a data file from one computer to another.
Value-added network	Network services provided through common carriers.
Video teleconference	The use of closed-circuit television to allow meetings without travel. A conference in which people in widely separated locations can hold meetings by seeing (and hearing) each other through an electronic communications network.
Voice messaging	A method of using the telephone system to receive messages which are stored by computer in the form of recorded, spoken words rather than soft copy.

UNIT OVERVIEW

I. Telecommunications

A. Historical overview

1. Early communication was accomplished through the use of smoke signals and drums.
2. The advent of the telegraph in 1844 and the telephone in 1876 made rapid communication over much longer distances possible.
3. The latter part of the 19th century introduced the development of wires made of copper that were twisted in pairs and used for long-distance transmission.
4. Experiments in the 1920s led to the transmission of pictures.
5. During World War II, telecommunications through the use of AM, FM, UHF, and shortwave was researched and developed.
6. In the 1950s, the Bell system introduced transmission of voice, data, and video over microwave radio relay systems. This began the era of television and long-distance calling.
7. In the 1960s, the integrated chip was used in the first computer-controlled PBX.
8. Minicomputers and modems were introduced in the 1970s.
9. Several technological changes took place which improved voice and data transmission.
10. Personal computers were introduced in 1975.
11. Enhanced transmission processes and fiber optics were being developed and introduced in the early 1980s to improve the transmission of voice, data, and video.
12. A multiple-vendor environment was established with the breakup of the Bell System in 1984. This resulted in an explosion of telecommunications technologies.
13. In 1986, in order to meet the needs of users desiring to share peripherals, resources, and data, Local Area Networks (LAN) were introduced.

B. Telecommunications applications

1. Banking

        a. Home banking to pay bills and inquire about account status
        b. Access to credit reports
        c. Main bank office and remote branch communications
        d. Automated teller machines

    2. Travel
        a. Automatic ticketing machines
        b. Airline seat assignments
        c. All types of reservations for travel-related businesses; e.g., motels/hotels, car rentals, airlines, and other aspects of travel

    3. Retailing
        a. Shopping at home
        b. Using touch screens for selection of various products and to see a product and what it can do
        c. Automatic inventory and reordering controls
        d. Automatic checkout through the use of wands, bar codes, or other electronic means
        e. Credit checks and signature recognition

    4. All business processes
        a. Accounting
        b. Management techniques
        c. Purchasing
        d. People management
        e. Environmental control

II. Modems (MOdulate DEModulate) convert a stream of data sent from a computer into audio tones that can be transmitted over a telephone line. They covert tones into data and send it to the receiving computer.

A. Modem speeds

    1. The 300-baud modem is the oldest and slowest and was previously the most common.

   - a. Transmits at the speed of 30 characters per second.
   - b. A double-spaced page of text takes approximately 1 1/2 minutes to transmit.
  2. The 1200-baud modem is presently the most common type used.
     - a. Transmits at the speed of 120 characters per second.
     - b. A double-spaced page of text takes approximately 20 seconds to transmit.
  3. The 2400-baud modem is becoming more popular and less expensive.
     - a. Services are still lacking.
     - b. Can operate at both the 300- and 1200-baud rates.
     - c. Transmits 240 characters per second.
     - d. A double-spaced page of text take approximately ten seconds to transmit.
  4. Modems are also available at 4800 and 9600 bauds for specialized uses, but they are very expensive.

B. Types of modems
  1. The external modem is the most common.
     - a. It is a small box that connects to the communication port on a computer.
     - b. Works with several types of computers at the same time.
  2. The internal modem is a printed circuit board which plugs directly into one of the expansion slots of a computer.
     - a. Takes up very little space.
     - b. Limited to working with the computer for which it was purchased.
  3. Acoustic modem
     - a. Uses rubber cups which hold the telephone handset.
     - b. It was one of the first modems used, but is no longer utilized because of its slow speed and lack of automatic features.
  4. A direct-connect modem connects directly to a telephone line.

a. This type is faster and more reliable.

b. Can be either an internal or external modem.

c. This type of modem is connected directly to the phone line and does not use the handset.

d. May operate at a baud rate of 1200, 2400, and even 3500 bits per second.

III. Communications software

A. Purposes of communications software

1. Acts as a bridge between the computer and the modem.

2. Software provides the modem with various commands.

a. Some of the basic commands are: to dial the telephone, "shake hands" with a distant computer, mail messages, and send and receive files.

b. Some software can be programmed to "wake up" in the middle of the night, dial a bulletin board or time-sharing service, log on using a personal password, check electronic mailbox, and send a message to another subscriber.

3. Assures compatibility

a. Choose software that works with both the computer and the modem.

b. Use software that comes with the modem.

(1) A Hayes modem comes with *Smartcom* software.

(2) A Commodore modem comes with a copy of *Common Sense*.

c. Hayes modem commands are considered the defacto standard for most modems, so many communication software programs use the Hayes commands.

B. Features of communications software

1. **Capture buffers**--temporarily store data that appear on the screen, which can be reviewed, printed, or saved on disk.

2. **Macros**--a series of keystrokes, saved as a file, which can be invoked by depressing one or two keys.

a. Logging onto a remote computer can be a tedious chore because of the numerous numbers that need to be provided in the right sequence and format.

b. Macros allow the user to instruct the computer and modem to automatically sign-on to an information service.

3. Transfer protocols are relatively simple.

a. Sending programs via phone lines can be tricky, because one small error or interruption forms a "dirty" phone line that will ruin the entire program.

b. Programs or text files that must arrive in the exact way they are sent require:

(1) Error-checking features on both ends of the transfer.

(2) The same set of rules, or the same transfer protocol, used for both computers.

c. *Xmodem* and *Modem 7* are two of the most well-known transfer protocols. Several software programs now have their own. One of the newest programs designed to communicate with a mainframe is called *Kermit*.

4. Simultaneous printing is useful for short messages that are not worth saving on a disk. Avoid using programs that cannot print while on-line.

5. Special features

a. **Text editor**--a handy tool for composing a brief message, or editing a file you captured without disconnecting from the computer or using a word processing program.

b. **Terminal emulation**--allows the computer to perform like a terminal extension of a mainframe.

c. **Chat mode**--splits the screen to allow "type-talking." One part of the screen displays the message being transmitted, and the other part displays your own typing. The two transmissions, therefore, do not get out of order or garbled, and there is more control over what is typed.

IV. Uploading and downloading information

A. To upload and download requires:

1. A terminal program with the proper capabilities for your computer.

2. Proper operation of the terminal software.
    a. Despite compatibilities, success is not guaranteed.
    b. Knowing how to operate the system is essential.
    c. Before starting, read the manual, and study the sequence of instructions which must be issued to the terminal program and remote system.
3. Running software on the remote computer which is compatible with your computer and terminal software.
    a. If the receiving terminal's program deviates even slightly from the agreed-upon protocols, problems arise.
    b. Usually, this is caused from the difference in types of computer programs on either end of the link.
    c. *Flow control* acts like a "traffic cop" during the transmission.

B. Downloading techniques

1. *Text captures* is the simplest type of downloading. This feature can be switched on, and the information is transferred to another storage medium.
2. A more flexible method allows incoming data to be saved in various ways.
    a. Saving to a disk file is a quick and easy. It allows the user to read, print, and modify the information later.
    b. Saving in memory buffer allows a large portion of RAM to be "fenced" off as a temporary storage area. Incoming data can be viewed upon demand and turned on and off when desired.
    c. Directly dumping the information to a printer is also a handy method, but it can consume a lot of paper, and the information has to be reentered into the computer.

C. The *Xmodem* utility is usually used for error-checking.

V. Transmission systems

A. Data communications devices are organized to transmit data from one computer to another, such as from digital to analog.

B. Facsimile systems send images, as in videoconferences, in forms such as diagrams, graphs, pictures, and drawings.

C. Electronic mail systems transmit messages to a designated electronic mailbox.

D. Voice communications involves transmission of spoken words through telephone networks.

VI. Voice messaging or voice mail

A. Background

1. Was developed as a new "toy" in the office. However, voice mail surprised everyone with its usefulness.

a. In the early 1980s, voice mail was limited to a type of answering machine which could be accessed to observe any messages left.

b. The messages were stored digitally in the memory of a dedicated computer system.

2. It is no longer seen as just a telephone-answering device, but rather as a messaging vehicle like electronic mail.

a. Electronic mail is essentially text messaging, that is, sending information that has been created at a keyboard and read on screen. Long documents or numerical data are best suited for electronic mail.

b. Voice mail is best suited to the rapid exchange of brief messages.

3. Advantage and disadvantage of voice mail over electronic mail

a. An advantage is that the user only needs a push-button phone to access the system.

b. A disadvantage is that no permanent written record of the message is there, unless it is separately transcribed.

B. Future of voice messaging

1. Significant advancements

a. Voice-messaging software has matured.

b. The cost of the processors and other hardware has decreased.

c. Decreased cost of information storage.

d. It takes less memory to store greater amounts of digitized voice.

e. Integration of voice-mail functions with private branch exchanges has added telephone-answering, call-forwarding, and message-waiting notification capabilities.

f. Integration allows for more sophisticated and dedicated equipment to be added.

2. Trends of voice mail

   a. Continued integration of voice mail with work stations and electronic mail will soon lead to the standardization of voice mail as an application for integrated office systems.

   b. Networking of separate voice-mail systems.

C. Hardware requirements

1. Businesses with five to ten telephones need at least a PC XT (20MG hard disk) with a voice data board. This system will answer a call with a standard, impersonal greeting.

2. A dedicated minicomputer is necessary for more powerful voice-mail systems.

   a. Message recording

   b. Forwarding messages to individuals or groups

   c. Editing and deleting messages

3. Integration with Centrex or PBX will allow the caller to leave personal messages for the person they are calling.

D. Uses of voice mail

1. Best suited to the rapid exchange of brief messages.

2. Makes it possible to store greater amounts of digitized voice using less memory.

E. Procedures for accessing a voice-mail number include:

1. Dial the 800 access number for voice mail.

2. Provide the identification number or password when requested.

3. Utilize the full range of features.

4. Wait, as the system automatically checks for messages.

5. Verify that the correct mailbox has been reached.

6. When the correct mailbox has been reached, do one of the following:

    a. Cancel the message.

    b. Leave a message.

    c. Sign off.

    d. Access any other function through the main series of access commands.

F. Features of voice mail

1. **Edit--**the user can edit sections of a message.

2. **Save--**a message can be saved in memory for future action or for relay.

3. **Reply--**one user can reply to a message from another user on the system.

4. **Security--**the password provides security and prevents unauthorized access.

5. **Broadcast--**a message can be spoken once and can then be broadcast simultaneously to the mailboxes of a number of voice-mail system users.

6. **Tracking--**some systems will keep track of the information on the system, such as the number of messages sent, originators, and recipients.

7. **Scan--**messages in the mailbox can be scanned before listening to the entire message.

8. **Redirect--**a message can be rerouted to other voice-mail system users.

9. **Delivery verification--**the system will inform the sender when a voice message has been delivered.

G. Advantages of using voice mail

1. Can have for several uses in the office.

    a. Notes of things to do

    b. Phone messages

    c. Information from colleagues

2. Messages are no longer lost or missed; increases effectiveness by eliminating telephone tag.

3. Messages can be left at any time at the main office (even weekends) and despite differences in time zones.

4. Assists in reducing:

   a. Wasted time and expense of phone communications.

   b. Uncertainty.

5. Available 24 hours a day, 7 days a week.

6. Able to store and forward messages.

7. Provides some confidentiality.

H. Premises upon which voice-mail systems work

1. Everyone on the system will check their voice mailbox for messages at least twice a day.

2. Instead of leaving messages with a secretary, employees will call their mailboxes, saving time for the secretary.

3. Use of telephone charge cards will be reduced.

4. Specific messages can be left, rather than general, "Please call" messages.

5. Voice mail can be used to set the date and time of appointments.

6. You are credited with picking up messages. Your ID code should never be given to someone to pick up messages. The other person would then have access to your confidential messages.

I. Methods of providing voice-mail services include an independent service bureau or an on-site system service bureau.

1. Users pay monthly fee for mailbox rental.

2. Service charges are assessed for time the users are connected to the system.

3. Service bureaus eliminate the cost of investing in a private voice-mail system.

4. They accommodate several hundred users.

J. User procedures

  1. A message is heard when a caller reaches an unattended phone connected to a voice-mail system.

    a. This message includes voice prompts which instruct the caller:

      (1) How to leave a message.

      (2) How to reach another extension.

      (3) How to contact an attendant by pressing specific keys on the telephone key pad.

    b. If a caller leaves a message, it is digitized and stored in the recipient's mailbox. (A section of the computer's memory that is reserved for that individual.)

  2. The recipient follows the prompts and presses the appropriate keys on the telephone keypad, and the message is played back.

VII. Teleconferencing

A. Kinds of teleconferencing

  1. **Real-time--**a more advanced form of communications that permits actual conversation.

    a. It is available through some multiuser bulletin board systems and most general information services.

    b. Called "real-time" because the communication proceeds interactively and instantaneously; in electronic funds transfer, for instance.

      (1) Real-time teleconferencing is one of the fastest growing network services.

      (2) It ranges from informal to formal environments.

    c. It is easy to access a network Special Interest Group's (SIG) on-line conference; however, once a user is on the channel, communication becomes somewhat difficult to understand.

      (1) Messages appear on the screen, preceded by the name and/or identifying job number of the conference participant who entered it.

      (2) Everyone can see what you typed in and can respond.

d. Difficulties

(1) A well-attended conference channel can fill your screen with messages so quickly that it is hard to pick them up.

(2) Generally, real-time communication does not have a lot of structure.

e. Some users utilize software that has protected windows so they can edit their messages before they are sent.

2. Message-basing bulletin boards

a. Message-basing bulletin boards were originally used for advertisements, personals, and brief announcements, and later were used as open forums to solicit advice and make statements.

b. Special bulletin board software was developed.

(1) Current uses include:

(a) Computers and programming.

(b) Law, literature, language, science, and agriculture.

(c) Special interest areas.

(2) Topical message bases are available from The Source, CompuServe, Delphi, et al.

B. Criteria for conference participation

1. Interest

2. Access to a computer, phone, and modem

3. Ability to type

4. Nondiscriminating; available to disabled people

C. Reasons for using teleconferencing

1. Replaces business travel.

2. Electronic teleconferencing saves times and money.

D. Modes of teleconferencing

1. Videoconferences occur when television cameras and monitors are combined with voice and image to augment an audioconference.

    a. Types of formats

        (1) Slow-scan/freeze-frame format displays a still image on a television screen.

        (2) Full-motion video format enables conference articipants to both see and hear one another in continuous action.

            (a) Not well accepted, because it is expensive.

            (b) Most users do not perceive a need for it.

    b. Types of conferences

        (1) **One-way conferences**--both video and audio signals are transmitted from a central location to several remote sites.

            (a) The only interaction is by audio over the telephone.

            (b) Presenters are heard at the primary location but are not seen.

            (c) This is sometimes called broadcast, or ad hoc, videoconferences.

            (d) Used for a single event, not on a regular basis.

            (e) May be seen by a large number of people.

            (f) Service available at several hotels through their pay-TV channels.

            (g) Used with the Tylenol scare by Johnson and Johnson when they spoke to the press explaining the situation. It is credited with saving the product.

            (h) Supports satellite transmission.

        (2) **Two-way videoconferences**--take place when all sites can both transmit and receive the video and audio signals in order for everyone to be seen and heard.

            (a) Extremely costly; demand is limited.

(b) Used to measure the reactions of people or their level of interest.

(c) Used only by very large companies because of its high cost and difficulty of implementation.

(d) Needs a room dedicated for the purpose.

2. Audioteleconferencing

a. Requires a "bridge," which is an electronic device that allows from three people to hundreds to converse from different locations.

b. May require the assistance of an operator, which is a lengthy and expensive process to establish.

c. Procedure used is for all participants to call a number that has been permanently assigned for this purpose.

3. Audiographic teleconferencing

a. Provides some graphic support by using telewriting-based terminal systems, or electronic blackboards, and digitized diagrams.

b. Another type allows for the use of slides, which are synchronized and viewed at the same time at several sites.

c. Electronic blackboard

(1) A special board on which images can be transmitted to a screen or terminal in another location.

(2) Some electronic blackboards have devices which allow the information on the board to be scanned, and which reproduce a hard copy of this information.

E. Levels of teleconferencing

1. A conference available to everyone is an *open number conference*.

2. A *closed conference* is open only to those who know the correct password.

3. A conference where only participants can make comments, but which allows anyone to receive it, is considered a *read-only conference*.

VIII. Transmitting information through networking

A. *Networking* is defined as the joining of two or more computers to share information or peripherals. This is accomplished through communication between computers and peripherals that is transmitted over some form of cabling, such as telephone wire, fiberoptic cable, or other channels.

B. Networks consist of several components.

1. A work station includes a microcomputer or terminal that is connected to the network and through which information can be stored.

2. **Network interface card**--each work station has a circuit board that provides the interface hardware and firmware to establish the communication link.

3. The channel contains the cable wiring which usually joins the stations of a local area network together. Either twisted pair cable, coaxial cables, phone lines, fiberoptic cables, or other cable types can be used, depending upon the specific application.

    a. Wiring method varies.

        (1) Coaxial cable is used to attach to local area network.

        (2) Telephone lines or satellites are used with long-distance networks.

    b. Installed within building like standard electrical wiring.

4. *File or print server* is similar to an electronic file cabinet which allows the users to access and share the same storage area.

    a. The computer holds the network software, and storage is available to all the stations on the network.

    b. Files can be quickly saved, and data can be transferred between files within the "file cabinet."

    c. Software is obtained from the file server; therefore, there is no need for a floppy disk drive at each computer.

    d. Some network file servers are dedicated only to serving the network. In other networks, the server can do other processing while the network is in use.

5. User application programs

6. Software that operate the system are programs that have been written specifically to coordinate the network hardware with the operating systems of the computers. This creates ease and convenience for the users.

    a. Networking software controls the file server and acts as the communications "traffic cop."

        (1) *Record locking* means only one person at a time can modify the file.

        (2) Security is determined by the network software.

    b. Customized software for the users

C. Networking concepts

1. The purpose behind networking, or any multiuser system, is sharing information and work distribution. The way in which this is accomplished varies according to the type of equipment being used, the geographical distribution, and the kinds of work being done.

2. In distributed data processing, an organization may have one large central computer with files that will be accessed and updated by stations throughout the region.

    a. For greater efficiency, work that does not require on-line access of the master files can be completed at remote sites.

    b. Sometimes in distributed processing, several computers in the system are each assigned some of the central work.

3. With a local area network, workers in each office in a building can access certain files as needed without having to leave their own desks.

    a. When microcomputers are used, each microcomputer can be used as a stand-alone computer, and the user only needs to log onto the network when necessary.

    b. Messages can be sent from one work station to another.

D. **Technology**--for many years, mainframes have been used within organizations for remote job entry from branch offices, or for time-sharing by several users as terminals. Recent changes include adding microcomputers at work stations instead of, or along with, terminals, and the development of local area networks.

E. Network setup procedures

1. Setting up a network is a job for trained professionals. Because most large systems require custom installation to meet the particular needs of an organization, those doing the work must have a technical understanding of both the hardware, the operating system, and network software.

2. Even with a small local area network, there is much technical knowledge required. But, it is possible for an individual to install his/her own small network.

3. There are network boards and software, packaged with installation instructions, costing only a few hundred dollars for up to four microcomputers. Since these come with no technical support, the user should be prepared to experiment and should try to find someone who has been through the process.

4. Once a network is installed, starting up a session is not too different from logging onto a bulletin board or information service.

F. Network configurations

1. *Star* topology has clusters of personal computers in a star shape around a central network server.

2. *Ring* network connects components in a single, closed loop.

3. *Tree (bus)* network is a single bidirectional communication link.

G. Types of networks

1. Intrafacility is often called a LAN (Local Area Network). It connects offices and building of a company.

2. A LAN connects the intraoffice network to the telephone company's central office or local exchange.

H. Advantages and disadvantages of using networks

1. Advantages

   a. The most obvious advantage is the ability to access and share data files.

   b. Another clear advantage is the ability to send and receive messages from others on the network.

            c. A third advantage, sometimes the most important, is for backup, when needed. The resulting crisis that so often occurs when a computer "goes down" is avoided when another microcomputer can be used to access the file server or other stations.

        2. Disadvantages

            a. There are few disadvantages with a local area network, because users have the option of being off-line or on-line.

            b. The extra cost and complication of installing the network hardware and software might be a disadvantage to some.

            c. If there is a dependency on the central files and adequate back-up is not maintained, the same problems could occur as in any centralized system. If the file server is down, then the whole network is down.

            d. Some find that networks are difficult to install and manage.

            e. Obtaining networkable software is frequently challenging.

IX. Careers in telecommunications

A. By the year 2000, more than 20% of all workers will be working mainly at home, compared to 5% in 1985.

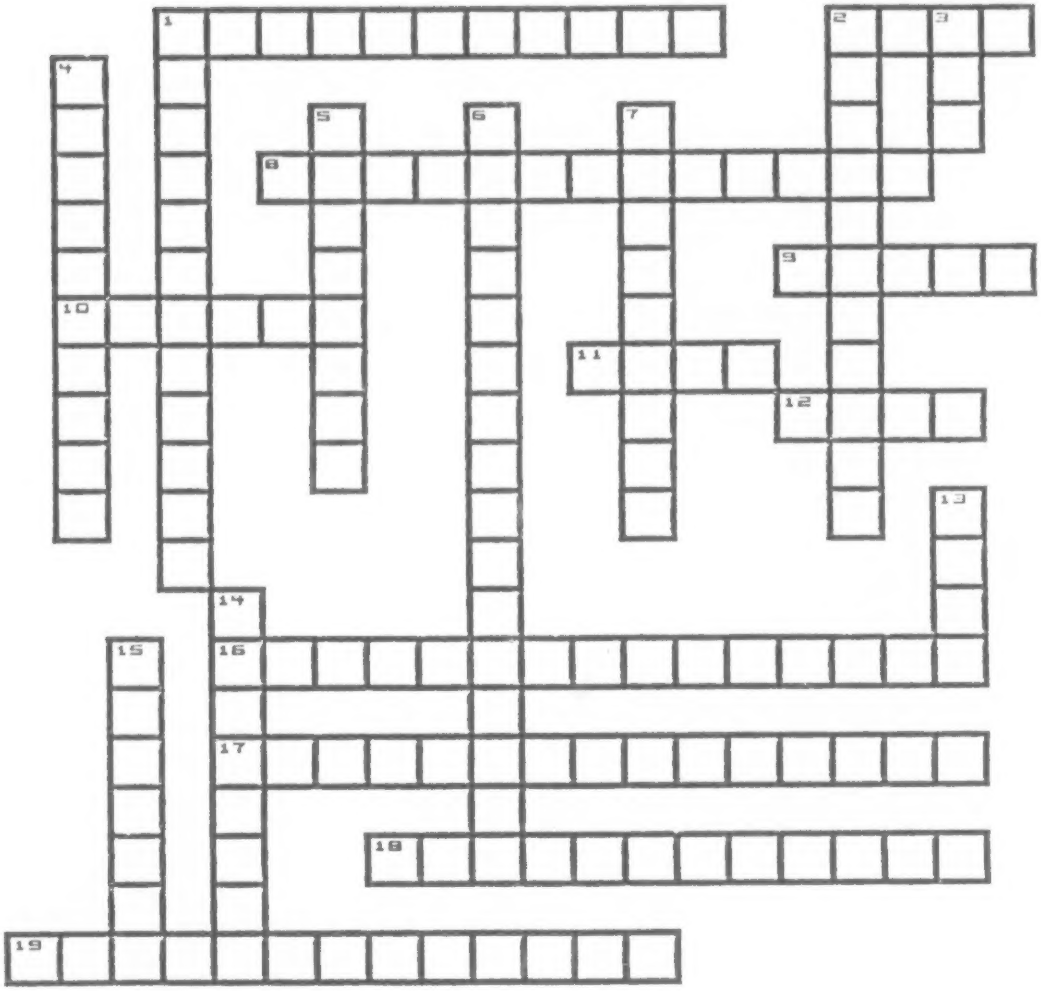
B. Telecommunications careers encompass both voice and data communications, teletext, videotext, telegrams, facsimile, and videoconferences.

C. Telecommunications specialists may perform communication tasks thought of as being secondary among many other job responsibilities.

1. Specialization will occur on the job, because college courses are too far behind the continuously changing field.

2. Transferability is decreasing, because needs and technologies are beginning to differ sharply.

ACTIVITY 1: TERMINOLOGY CROSSWORD PUZZLE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ACTIVITY 1: TERMINOLOGY CROSSWORD PUZZLE CLUES

ACROSS CLUES

1. A process in which the receiving computer sends a signal to tell the sending computer that it is ready to receive data.
2. In telegraphic communications, this refers to the transmitting of a telegraphic message.
8. An organization, such as the telephone company, that is authorized by the FCC to offer communication services.
9. Short for modulator-demodulator; it connects the computer to the telephone system.
10. The transmission of data for electronic storage and subsequent retrieval.
11. A communication protocol which enables two-way transmission of data at the same time.
12. A local area network in which the work stations are connected to each other, but without a central host.
16. A type of modem which uses a telephone handset to connect the phone line to the computer.
17. A system that has a central computer, but some processing is done at remote sites.
18. A network configuration in which all stations are connected by one path to the central computer, but the paths are not connected to each other.
19. A computer with software and storage dedicated to communication with other computers over telephone lines.

DOWN CLUES

1. The file server in a local network, or the mainframe in other networks.
2. A means of transmission using glass fiber.
3. A network that is limited to one room, building, or complex.
4. The host computer in a network that coordinates communication and has central storage capability available to the network.
5. To receive a data file from another computer.
6. Each terminal or work station is connected directly to the host.
7. A communication protocol which allows transmission of data in only one direction at a time.
13. A network configuration in which a central computer is directly connected to each terminal.
14. A measure of the number of bits per second transmitted.
15. The connection between the sender and the receiver.

ACTIVITY 2: DEVELOPMENT OF TELECOMMUNICATIONS AND ITS USES

Project 1

INSTRUCTIONS: **Provide a brief time line of the historical development of telecommunications. Include at least 10 major events.**

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

ACTIVITY 2 (Continued)

Project 2

INSTRUCTIONS: Research, in current magazines and periodicals, the current telecommunications applications in various businesses. Some areas to consider are the banking industry, travel industry, and any other that you find of interest (complete list at school). Write a one-page report, and be ready to share your information with the class.

Project 3

INSTRUCTIONS: Compile a list of business processes that could be done with telecommunications. Some examples are mail, accounting, etc. you should have at least six processes on your list. Be ready to share your list with the class. Add any areas that your classmates thought of that you did not already have.

1.

2.

3.

4.

5.

6.

7.

8.

ACTIVITY 3: MODEMS

Project 1

INSTRUCTIONS: Define what "modem" stands for and what it does.

Project 2

INSTRUCTIONS: Describe transmission speeds and other characteristics of the modem speeds listed below.

1. 300 baud

2. 1200 baud

3. 2400 baud

4. Above 2400 baud

ACTIVITY 3 (Continued)

Project 3

INSTRUCTIONS: Describe three types of modems.

1.

2.

3.

482

ACTIVITY 4: COMMUNICATION SOFTWARE

Project 1

INSTRUCTIONS: List the purposes of communication software.

1.

2.

3.

Project 2

INSTRUCTIONS: Describe six features of communication software.

1.

2.

3.

4.

5.

6.

ACTIVITY 5: UPLOADING AND DOWNLOADING

INSTRUCTIONS: **Describe the uploading and downloading procedures specified for the particular system that your teacher has chosen to use, or that has been demonstrated.**

Uploading

Downloading

ACTIVITY 6: VOICE MESSAGING

Project 1

INSTRUCTIONS: List five procedural steps for accessing voice mail. Make sure to describe what to do when the correct mailbox has been reached.

1.

2.

3.

4.

5.

ACTIVITY 6 (Continued)

Project 2

INSTRUCTIONS: **By its description, fill in the appropriate voice-mail feature.**

________________ 1. This can be done to messages before listening to the whole thing.

________________ 2. Prevents unauthorized access.

________________ 3. Keeps an account of the number of messages.

________________ 4. Storing a messages for future action of replay.

________________ 5. System will inform the sender when a voice message has been delivered.

________________ 6. User can answer a message from another user.

________________ 7. Allows experienced user to skip standard voice prompts.

________________ 8. Changing sections of a message.

________________ 9. Message is spoken once, but it distributed to several mailboxes.

________________ 10. Rerouting messages to other voice-mail system users.

ACTIVITY 6 (Continued)

Project 3

INSTRUCTIONS: List five premises needed for voice mail to work.

1.

2.

3.

4.

5.

Project 4

INSTRUCTIONS: Describe five advantages of using voice mail for business.

1.

2.

3.

4.

5.

ACTIVITY 7: TELECONFERENCING

Project 1

INSTRUCTIONS: Write a paragraph describing the two kinds of teleconferencing.

Real-time

Messsage-basing

ACTIVITY 7 (Continued)

Project 2

INSTRUCTIONS: Match the type of teleconferencing with its description.

TYPE

A. Audioteleconferencing

B. Closed conference

C. Read-only conference

D. Teleconference

E. Videographic teleconferencing

F. One-way conferencing

G. Two-way videoconferencing

H. Freeze-frame videoconferencing

I. Full-motion video

J. Videoconferencing

K. Audiographic teleconferencing

DESCRIPTION

_______ 1. Occurs when a television camera and monitor is combined with voice and image.

_______ 2. When all conference sites can both transmit and receive the audio and video signals so that everyone can be heard.

_______ 3. May use a synchronized slide show which can be viewed at the same time at several sites.

_______ 4. Enables participants to hear and see one another in continuous action.

_______ 5. A conference which is open only to those who know the correct password.

_______ 6. Both video and audio signals are transmitted from a central location to several remote sites.

_______ 7. Everyone can receive this conference, but only the participants can make comments.

_______ 8. Converts into an image that is displayed on a television screen.

_______ 9. A conference available to everyone.

_______ 10. All participants call a number that is permanently assigned for this purpose.

ACTIVITY 7 (Continued)

Project 3

INSTRUCTIONS: Using current periodicals, find articles on teleconferencing. Select one type of teleconferencing, and type a one-page, double-spaced report.

ACTIVITY 8: NETWORKING

Project 1

INSTRUCTIONS: Describe and list the six components of a networking system.

1.

2.

3.

4.

5.

6.

Project 2

INSTRUCTIONS: Write a paragraph describing three major concepts involved in networking.

ACTIVITY 8 (Continued)

Project 3

INSTRUCTIONS: Draw each of the following types of network configurations: star, ring, and tree (bus).

SECTION V: COMPUTER COMMUNICATION TOOLS

UNIT II: CONCEPTS OF COMPUTER GRAPHICS

UNIT OBJECTIVE: Students will demonstrate comprehension of the graphic representation of data, execute graphs for specific data sets, and discuss the applications of computer graphics.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Define and use graphics-related terminology.
2. Describe basic graphic concepts.
3. Discuss important graphic design concepts.
4. Discuss the differences between presentation and free-drawing graphics.
5. Match different types of graphs with types of information appropriate for demonstration with those graphs.
6. Match different types of graphics hardware with graphics applications appropriate for that hardware.
7. Outline and discuss several different applications for computer graphics.
8. Create several graphic images to represent a variety of information.
9. Identify tools for preparing information for mass distribution including graphics.

FOCUS: As the ratio of capabilities versus price in computer hardware increases, computer graphics become more and more important in the functioning of today's businesses. Students should be prepared to address this issue by mastering the basics of computer graphics.

TERMINOLOGY

24-pin, dot-matrix printer	A printer that uses two rows of 12 pins to create a matrix that is 12 dots high and 20 dots wide, yet produces type that is the same size as the characters normally produced by nine-pin printers.
Absolute coordinates	Points can be chosen from the x- and y-axes.
Animation	A technique of recording graphics onto videotape, where they can be enhanced by objects moving on the screen.
Area graph	A type of graph that helps the viewer to visually compare the values of the two plotted lines.
Array	A command that is used to repeat any drawing element or block; can be either rectangular or circular.
Bar	This rectangle extends from the origin (baseline) and is often used to plot values against time. It can be drawn either vertically or horizontally.
Bit-mapped graphic	Every individual pixel of the screen is treated as a separate memory position that represents a color or a shade of gray. When all the dots are viewed at once, they blend together to form a complete image.
Block	Any part of a CAD drawing can be stored in the computer's memory and used again in other drawings that might call for the same element. Sometimes called subdrawings.
Bullets	The symbols beside the lines in text charts that are used to give emphasis.
CAD (Computer-aided design)	Used by architects and engineers to produce very accurate and highly detailed drafting of design work.
CAM (Computer-aided manufacturing)	A three-dimensional drawing of a manufactured object is loaded into the computer.
Canvas	The drawing area in a paint program.
Cartesian coordinate	A horizontal x-axis and a vertical y-axis are used to plot relative points on a particular plane.
CGA monitor	IBM color graphics adapter will display four colors at a resolution of 640 by 200 pixels.
Chart	Used synonymously with graph.

Clustered bar graph	A type of bar graph in which bars represent the total value against time. All bars originate at the x-axis and are grouped according to a value represented by the entire cluster.
Color monitor	A monitor that uses three pixels to produce color. The composite color image is formed by turning on the pixels in various combinations.
Column	This rectangle extends from the origin (baseline) and often is used to plot values against time. It can be drawn either vertically or horizontally. It is the same as a bar.
Computer graphics	The technique of using computers to prepare visual presentations of information.
Coordinate	A mathematically defined point.
Digitizing tablet	A pad with a puck that operates similarly to a mouse.
Dot matrix	Represents characters by selecting certain dots out of an established matrix which is nine dots high and five dots wide.
EGA color monitor	The IBM enhanced graphics adapter displays 16 out of 64 colors at a resolution of 640 by 350 pixels.
Erase	A paint tool used to get rid of an image.
Excel	A spreadsheet with graphics which features 3-D, a variety of colors, many styles and lettering fonts, and other special add-ons.
Exploded pie graph	A pie graph with a section pulled away to give that section added emphasis.
Fatbits	A paint tool used to zoom in on a particular part of a drawing so that individual pixels can be edited one at a time. A paint tool used to draw in much greater detail than is possible in the full view.
Film recorder	A device used to take a digital image and record that image directly onto film.
Flatbed plotter	Holds the paper flat on a horizontal surface and moves the pen in both directions.
Font	Refers to a specific style of lettering.
Free-drawing graphic	Paint and draw programs that do not require a specific structure for the information they illustrate.
Gantt chart	A type of time schedule chart.

Graphics coprocessor	A dedicated processor which frees the central processor from the task of computing information for the display monitor.
Graphic legends	A label attached to a graph which specifies the range of values of the graph.
Grid line	A line that runs horizontally and is used to mark units of measurement according to the values plotted on the x- and y-axes.
Hard copy output device	Printers, plotters, and film recorders that physically print their data on a piece of paper or film.
Hercules monochrome	Monitor brand graphics adapter that provides a resolution of 752 by 350 lines in two colors.
Icon	A symbol used to represent a particular value plotted on a line or scattergraph or to represent certain tools, colors, or patterns.
Ink-jet printer	A very small, lightweight printer that can produce 300-DPI graphics and text.
Label	A word or phrase that identifies values in a graph.
Laser printer	The heat-transfer engine that produces high-quality resolution at 300 dots per inch.
Lasso	A very useful function that allows any part of a drawing to be moved to another place on the canvas.
Layer	Similar to transparent sheets of paper on which different parts of the drawing are placed.
LCD-presentation projector	This device looks like a regular overhead projector, but it has a liquid crystal digital output device that converts digital signals into a transparent image that is projected onto a screen.
Legend	Usually attached below a graph to explain the significance of an icon, color, hatch pattern, or symbol.
Light pen	A pointing device that utilizes a special light-sensitive screen. Pen is pressed against the special monitor to enter coordinates.
Line graph	A line drawn between the points plotted against x- and y-values is a line graph; used to plot a certain value against time.
Line plot	Made up of lines connecting plotted points, or vertices, on a vertical and horizontal axis.

Lotus 1-2-3	A spreadsheet program with graphics that is the most widely used program in the country.
Math coprocessor	A dedicated microprocessor that is especially designed to handle floating point calculations.
Mechanical mice	Track desktop movement by measuring the movements of a rolling ball which is pulled across the surface.
Mirror	Used to copy an exact, symmetrical duplicate of an object along a specified mirror line.
Mouse	A pointing device for the computer screen.
Object-selection process	A process that is crucial to the editing process in CAD programs.
Optical mice	Track movement magnetically by changing the position of a puck in relation to an underlying coordinate grid in the mouse pad.
Paint program	A program that draws pictures on the screen based on bit-images. Resolution is limited to the on-screen resolution capability of the monitor.
Paintbrush	Enables the artist to create lines of different widths and shapes.
Palette	The screen area of a paint program that contains the colors, shading, and patterns that may be used in the paint program.
Pie graph	A circle cut into sections that is usually used to represent parts of a whole expressed in percentages.
Pixels	The computer screen is composed of many tiny dots of light.
Plot	To assign a point a position according to the value the point represents in the chosen x- and y-scales.
Plotter	An output device that uses a computer-controlled pen to draw images and is used exclusively for graphics.
Polar coordinate	A coordinate plotted from a point to a specific distance and angle.
Postscript laser printer	A printer that uses a page-description language.
Presentation graphic	Programs used to illustrate information imported from business-related programs.

Quattro	A spreadsheet program with graphics that has features such as 3-D, colors, styles, lettering fonts, and special add-ons.
Relative coordinate	A coordinate that is plotted to a change in the x- and y-axes from a previously drawn point.
Resolution	The number of dots used to make an image.
Rotate	A command that allows an object to be rotated around a chosen point in a drawing.
Scattergraph	A series of points, plotted according to values on the x- and y-axes, that demonstrate an idea.
Scrolling	A paint tool used to get from one part of the canvas to another.
Soft copy output device	Monitors, LCD projectors, or other devices that display electronically without printing output on paper or film.
Solid	A command used to draw squares, rectangles, or polygons of various shapes.
Spray paint	A paint tool designed to imitate airbrushing techniques. It produces a light spatter of the selected color or shade.
Stacked bar graph	A type of bar graph in which each bar represents the total value against time, but each bar is also split up to show the relationship of several different parts of the whole bar.
Statistical analysis	Analyzing past trends and events in order to predict future trends and events.
Tag	A word, number, or symbol which gives meaning to tick marks.
Text chart	A group of words used during the course of a presentation to express a point.
Tick mark	A unit of measure, smaller than a grid line, which is used to plot points.
Title	A word or phrase inserted above a graph to identify the overall concept the graph conveys.
Toolbox	The screen area of a paint program that contains a selection of drawing tools used in the paint program.
Trace	A CAD command which is used to draw double lines of a specified length and width.
Typesize	The size of a character is measured in points.

Vector graphic	A graphic drawn by mathematical algorithms in the computer.
VGA monitor	Vector graphics array monitors start at a resolution of 640 by 480 pixels and go up to around 1200 by 1000 pixels. Can display 256 colors out of palette of at least 4000.
X-axis	Horizontal line along the bottom of a graph that usually represents units of time.
Y-axis	Vertical axis of a graph that usually represents different values of the items being measured.
Zoom	A CAD command used to choose a small part, or window, of the larger drawing and expands that part until it takes up the entire screen.

UNIT OVERVIEW

I. Defining graphics

  A. How people see information

    1. Most of us rely on our sight for information.

    2. Words are processed one at a time; many parts of a picture are processed at once.

    3. We remember what we see longer and with more accuracy than what we read.

  B. Why graphics and pictures should be used

    1. Business communications must be interpreted quickly.

    2. The average person speaks only about 100 words per minute.

    3. Our minds work much faster.

    4. Graphics and pictures are a faster way to communicate.

  C. Rapid expansion of business graphics usage recently

    1. A few years ago, most businesspeople were content with handing out copies of their spreadsheets or using the simple graphics that could be done on *Lotus 1-2-3*.

    2. When a clear, impressive graphic was needed for a major presentation, a graphic arts company was hired.

    3. Due to the recent price decline of high resolution monitors and output devices, and to the introduction of faster microcomputers that can handle graphics better--such as the IBM compatible 386 models--many professionals now find it practical to do their own graphics.

  D. Computer graphics defined

    1. **Computer graphics**--the technique of using computers to prepare visual presentations of information.

    2. These visual presentations can be a variety of forms.

      a. Drawings

      b. Graphs

      c. Charts

d. Diagrams

e. Animated sequences on videotape

E. Built-in graphics ability of application programs

1. Graphics from spreadsheets

a. By far, the primary use of graphics in business is to interpret data from spreadsheets. *Lotus 1-2-3* is still the most widely used graphic program in the country.

b. The most advanced spreadsheets have very versatile graphics capabilities.

(1) *Excel:* 3-D, many colors, many styles, many lettering fonts, and special add-ons.

(2) *Quattro:* 3-D, many colors, many styles, many lettering fonts, and special add-ons.

2. Graphics from databases

a. Many database programs include graphics functions. Database graphics tend to be oriented as pie graphs, or parts of a whole.

b. A graph may be automatically produced from the program's default settings.

(1) Many do not even require the user to specify parameters for the graph in advance.

(2) The user only has to specify which type of graph he or she wants to use.

F. **Presentation graphics**--programs used to illustrate information imported from business-related programs.

G. **Free-drawing graphics**--paint and draw programs that do not require a specific structure for the information they illustrate.

1. Many programs are available at reasonable cost.

2. Use of free-drawing graphics in business is growing quickly.

3. Paint programs can be used to enhance graphs from spreadsheets.

4. Free-drawing graphics are very good for creating word charts.

II. Basic graphics design concepts

A. Basic components

1. **Cartesian coordinates**--a horizontal x-axis and a vertical y-axis are used to plot relative points on a plane.

2. *Plotting* a point means to assign it a position according to the value the point represents in the x- and y- scales.

    a. **X-axis--**the horizontal line along the bottom of the graph; usually represents units of time.

    b. **Y-axis--**the vertical axis of the graph; usually represents different values of items being measured.

3. **Tick marks**--units of measure, smaller than grid lines, that are used to plot points.

4. **Grid lines**--run horizontally or vertically from the tick marks and are used to mark units of measurement. They are often omitted in column, bar, and area graphs. (See Figure 1.)

5. **Tags**--are words, numbers, or symbols which give meaning to the tick marks. They are also sometimes referred to as the "scales." (See Figure 1.)

6. **X/Y-axes titles**--words that identify the values plotted on the x- or y-axis.

7. **Icons**--symbols used to represent a particular value plotted on a line or scattergraph.

8. **Legend**--usually attached below the graph to explain the significance of an icon, color, hatch pattern, or symbol.

B. Types and parts of a graph

1. **Title**--inserted above the graph to identify the overall concept that the graph conveys. (See Figure 1.)

2. **Scattergraph--**a series of plotted points that demonstrate an idea. (See Figure 2.)

3. **Line graph--**a line is plotted between the points and drawn to become a line graph; often used to plot a certain value against time. Replacing the tags on the x- and y-axes will demonstrate this. (See Figure 3.)

4. **Area graph**--if the area between the x-axis and the plotted line is filled in with either a color or a pattern, it is called an "area graph." They help the viewer to compare visually the values of the two plotted lines. (See Figure 4.)

5. **Column or bar graphs**--the most common type of graph, and they are often used to plot values against time. Usually icons are not shown. The bars can be either vertical or horizontal. (See Figures 5 and 6.)

6. **Gantt charts**--a variation of the horizontal bar graph. The bars have no common starting point. They are very effective for time schedule charts.

7. **Pie graphs**--usually used to represent parts of a whole expressed in percentages. Colors or patterns are used to differentiate between the sections. (See Figure 7.)

8. **Exploded pie graph**--a graph in which a section can be pulled away to give added emphasis. (See Figure 8.)

9. **Stacked bar graph**--used to define a particular value against time and the parts of a whole as well. Each bar represents the total value against time, but each bar is also split up to show the relationship of several different parts of the whole bar. The color or hatch pattern of each section of the bars is identified by the legend, which is usually found below the graph. (See Figure 9.)

   NOTE: Stacked bar graphs can be confusing, because the segments within the bars have no common baseline.

10. **Clustered bar graph**--a better way to demonstrate the same information is with a clustered bar graph. Rather than stacking segments on top of each other, all originate at the x-axis and are grouped in clusters. (See Figure 10.)

11. **Three-dimensional graphics**--enhancing a drawing by giving them the extra dimension. (See Figures 11 and 12.)

    a. Three-D graphs are clearer than flat graphs.

    b. The extra z-axis can be used to plot another range of values.

12. **Text charts**--a group of words used during the course of a presentation to express a point. They are, by far, the most commonly used type of graphic.

    NOTE: Text charts should be simple. They should be limited to 6 to 8 lines with only 8 to 10 words in each line.

a. **Bullets**--the symbols beside the lines are called bullets and are used to give emphasis. Some programs will let you specify any object for use as a bullet.

b. **Typesize**--the size of characters is measured in points. A point is 1/12 of a pica, or 1/72 of an inch. (See Figure 13.)

c. **Font**--refers to a specific style of lettering.

C. **Graphic design concept**--less is more.

1. Most professionals agree that it is essential to limit fonts, colors, typesizes, and words.

a. Sample guidelines

(1) Bar and pie graphs

(a) Use only the colors needed for the number of sections or bars.

(b) Use a bright color for the most important section.

(c) Use different colors for the title and bars or sections in the graph.

(d) If all the bars represent the same thing, use the same color.

(2) Text charts

(a) Use only three colors, and two are usually enough.

(b) Use three or fewer fonts.

(c) Use three or fewer typesizes.

b. For added simplicity, replace tags with pictures or symbols.

c. A simple border is a nice touch.

d. On titles and legends, if you must go into great detail to explain what you are showing, it might be best to rethink your approach.

e. It is always a good idea to include a tag below the graph which specifies the source. It gives the graph more authority.

2. Background color is important.

a. A neutral or white background should be used for printed material.

b. A black or dark-colored background will provide more contrast and a more visible image for slide presentations.

3. There are several important advantages to printing charts in black and white rather than color.

a. Photocopies may be easily reproduced and distributed to the participants in the presentation.

b. If the chart is used as an overhead transparency, the person giving the presentation may color directly on the copy with an opaque marker.

c. Black and white copies are less expensive to print and reproduce than are color copies.

III. Computer graphics applications

A. Communicating information

1. The most common use of computer graphics is to summarize extended reports for business and applications. These charts and graphs can condense several pages of written information into a clear, easily understood visual format.

2. If a picture is worth a thousand words, a computer graphic is worth at least as many numbers.

B. Statistical analysis

1. Statistical analysis involves trying to predict future outcomes.

2. To predict the future, you must carefully analyze the past.

3. If you can plot a trend over the last five months, and you are fairly sure that there will be no outside variables to change that trend, you can be fairly sure that the same curve will remain in effect for the next five months.

C. Flow-charting

1. Computer programmers often draw a graphic representation (a flow chart) of a program they are writing.

2. Computer graphics programs can be used to produce a flow chart.

3. If a flow chart needs to be edited, it is much easier to make changes on the computer.

D. CAD--computer-aided design

1. Used by architects and engineers to produce very accurate and highly detailed drafting of design work.
2. Many CAD programs are capable of producing three-dimensional drawings.
3. Some CAD packages are capable of rendering and shading a 3-D drawing.
    a. The user will specify such variables as direction and source of light.
    b. The program will produce a realistic picture of the drawing.
    c. Some even allow the user to "walk" through the rendering of a new structure, room by room.

E. CAM--computer-aided manufacturing

1. In CAM, a three-dimensional drawing of a manufactured object is loaded into the computer, and the computer refers to that drawing to control a robot that manufactures the actual part.
2. In many companies, computers are involved in every aspect of a product's development, from conception to manufacture.

F. Computer-simulated testing

1. Computer graphics are used in programs which simulate testing of an actual part.
2. For example, a program might simulate mathematically calculated stress variables on an airplane's wing to determine if the wing would remain intact during flight.

G. Computer graphics as an art medium

1. Computers not only make visual presentations of programmed information, but they can also be used to prepare graphic illustrations and original artwork.
2. Many people consider the computer to be an art medium in itself.
3. This is a relatively new idea and is due to recent improvements in output devices for computer graphics.

H. Animation

1. We see a great amount of computer animation everyday.
2. Almost every football or basketball game broadcast uses computer animation in its opening sequence.
3. Anyone who watches HBO or VH-1 would probably recognize their beautifully animated station identification and promotional ads.
4. A presentation will often be recorded onto videotape and viewed with a full range of cinematographic effects, including:
    a. **Animation**--bars and sections will grow or shrink to emphasize increases or decreases in size or value.
    b. **Full audio tracks**--music and sound effects can be added.
    c. Interaction between animation and photographed video is possible.
    d. Transitions between graphics may be accomplished by using "wipes," "dissolves," or "fades."

I. Computer animation in the movies

1. All of the spaceship sequences in *The Last Starfighter* and *The Flight of the Navigator* were created using computer animation.
2. The stained-glass swordsman in Stephen Spielberg's *Young Sherlock Holmes* was also created using computer animation.

J. Animation in video games and flight simulators

1. Flight simulators are often used to train pilots (or even would-be pilots) safely at home in front of their computer screens.
2. There are countless video games that use computer animation.

VI. Important hardware required for graphics

A. Specialized graphics input devices

1. **Mice**--pointing devices for the computer screen.
    a. The mouse is moved along a desktop, and the movements of the mouse on the desktop are digitally matched to the movements of a pointer or cursor on the computer screen.

b. A mouse allows commands to be chosen from on-screen menus, foregoing the necessity of typing in the commands every time they are used.

c. Types of mice:

(1) **Mechanical mice**--mechanical mice track desktop movement by measuring the movements of a rolling ball which is drawn across the desk surface.

(2) **Optical mice**--optical mice track movement by changes in the position of a puck in relation to an underlying coordinate grid in a mouse pad.

2. **Light pens**--pointing devices that utilize a special screen that is light-sensitive. The light pen is pressed against the special monitor to enter coordinates.

3. **Digitizing tablet**--the most accurate input device for entering coordinates and graphic data.

a. A pad with a puck which is similar to operating a mouse.

b. The pads range in size from 12" by 12" to 36" by 48".

c. Custom menus can be laid out on these pads, and drawings can be traced by taping an original drawing to the pad and clicking all the coordinate points of that drawing.

B. Specialized graphics output devices

1. **Soft copy output devices**--display graphics and other information electronically without printing output on paper or film.

a. Monitors

(1) **Resolution**--the number of dots used to make up an image.

(a) The computer screen is composed of many little dots called "pixels."

(b) The pixels visually blend together to form an image.

(c) The more pixels there are on a screen, the clearer that screen's images will be.

(2) Types of monitors

(a) **Color monitors**--to produce color, a monitor must use three pixels. These three pixels are three different colors: red, green, and blue. The composite color image is formed by turning on these pixels in various combinations. Using three pixels in place of one tends to decrease the resolution. The color monitor must have three times as many pixels to remain at a comparable level of resolution with the monochrome monitor.

1) CGA monitors

a) The one with the lowest resolution is the IBM color graphics adapter, or CGA.

b) Display four colors at a resolution of 640 by 200 pixels.

c) Inadequate for computer graphics.

2) **EGA**--enhanced graphics adapter

a) Display will show 16 out of 64 colors.

b) Resolution is 640 by 350 pixels.

3) **VGA monitors**--vector graphics array

a) Provides the highest resolution that is currently available.

b) Start at a resolution of 640 by 480 pixels and go up to around 1,200 by 1,000 pixels.

c) Can display 256 colors out of a palette of at least 4,000; some let you choose from up to 16 million colors.

(b) Other soft copy output devices are as follows:

1) **Film recorders**--these devices, such as the Polaroid Palette and the Polaroid Palette II, can take a digital image and record that image directly onto film.

a) The film can then be made into slides, prints, or enlarged prints.

b) Film recorders can produce images of a very high resolution, approximately equal to the photographic grain of the film.

2) **LCD-presentation projectors**--these devices look like regular overhead projectors, but they do not require transparancies. In place of the tray on which a transparency would normally be placed, there is a liquid crystal digital output device that converts digital signals into a transparent image that is projected onto a screen.

3) **Video presentation systems**--many business graphic presentations are converted to 1/2-inch or 3/4-inch videotape and are shown on regular television monitors with full sound and animation.

2. **Hard copy output devices**--these are printers, plotters, and film recorders that physically print their data on a piece of paper or film.

a. **Printer types**

(1) **Dot-matrix printers**--represent characters by selecting certain dots out of an established matrix.

(a) This matrix is nine dots high and five dots wide.

(b) To produce the matrix, the printer uses a vertical row of nine pins which strike an inked ribbon.

(c) For a higher-quality print, the pattern of dots is moved slightly and repeated, which results in a denser pattern of dots.

(d) These darker letters are called "near-letter-quality."

(2) **24-pin, dot-matrix printers**--use two rows of 12 pins to create a matrix that is 12 dots high and 10 dots wide.

(a) Produces the same size as the characters normally produced by nine-pin printers.

(b) The quality approaches that of laser printers, so 24-pin print is often referred to as "letter-quality."

(3) **Laser printers**--use the same heat-transfer engine as personal photocopiers.

(a) Produces a high-quality print .

(b) The resolution of the laser printer is 300 dots per inch.

1) This means that the laser printer constructs text and graphics from a matrix of dots so dense, there would be 300 by 300 of them in a square inch.

2) Some of the newer printers are in the 600-dots per inch range. This is referred to as "typeset quality."

(4) **Postcript laser printers**--the Apple laser writer was introduced with a new software package, *Postcript*, that enabled it to reproduce anything that could be produced on the computer. It is a page-description language that is available on many of today's laser printers.

(5) **Ink-jet printers**--very small and lightweight and are often used as portable printers.

(a) They can produce 300-DPI graphics and text, are less expensive than laser printers, but are not quite as flexible.

(b) Some of them can produce graphics in several colors.

b. **Plotters**--use a computer-controlled pen to draw images and are used exclusively for graphics. A plotter can accurately draw any image the computer can produce.

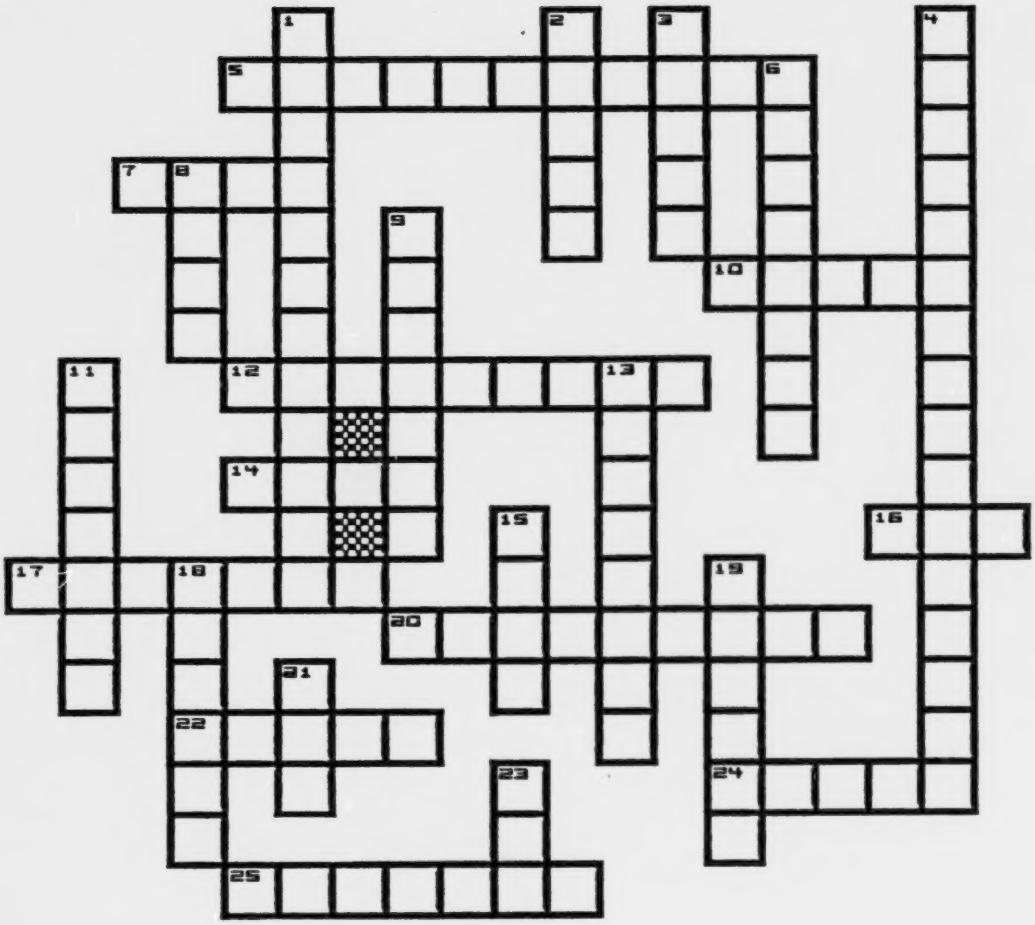
(1) **Drum plotters**--with drum plotters, the paper is moved on a rotating drum under the pen to control vertical travel. The pen travels only horizontally.

(2) **Flatbed plotters**--holds the paper flat on a horizontal surface, and the pen moves in both directions.

C. **Internal speed-up hardware for graphics**--since graphics often require much more computing power than text-based applications, there are several hardware options designed to increase the computer's efficiency at handling grapics.

1. **Math coprocessor**--a dedicated microprocessor that is especially designed to handle floating point calculations. This frees up the computer's regular microprocessor so computing speed is enhanced. A math coprocessor is essential for CAD and other advanced graphics. Some large spreadsheets may also require math coprocessors.
2. **Graphics coprocessor**--a dedicated processor which frees the central processor from the task of computing information for the display monitor. For high-level CAD graphics applications, this can result in a dramatic increase in speed and performance.

ACTIVITY 1: TERMINOLOGY CROSSWORD PUZZLE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ACTIVITY 1: TERMINOLOGY CROSSWORD PUZZLE CLUES

ACROSS CLUES

5. Paint and draw programs that do not require a specific structure for the information they illustrate.

7. Graphs used to plot values against time.

10. Another name for graph.

12. A coordinate system in which a horizontal X-axis and a vertical Y-axis are used to plot relative points on a plane.

14. Graphs that are often used to plot a certain value against time by drawing a ____ between plotted points.

16. A word, number, or symbol which gives meaning to the tick marks.

17. Prices of high resolution monitors and output devices have recently done this.

20. A technique of recording graphics onto video tape.

22. A sophisticated spreadsheet program.

24. The most well-known spreadsheet program.

25. A type of graph that represents the total value against time and also shows the relationship of several different parts of the whole.

DOWN CLUES

1. Graphic programs used to illustrate information imported from business-related programs.

2. A type of time schedule chart.

3. Most of us rely on our _____ for gathering information.

4. The technique of using computers to prepare visual presentations of information.

6. Another name for chart.

8. A type of graph that assists the viewer in visually comparing the values of two plotted lines.

9. A graph that has a series of points, plotted according to values on the X- and Y-axis.

11. Symbols used to give emphasis.

13. We remember what we see longer, and with more____, than what we read.

15. Lines that run horizontally to mark units of measurement.

18. Explains the significance of the symbols and other markings on a graph.

19. The name of the dots that compose the computer screen.

21. Device that converts digital signals into an image that is projected onto a screen.

23. A circle cut into sections.

ACTIVITY 2: GRAPHIC CONCEPTS

Project 1

INSTRUCTIONS: Match the basic graphic elements with the proper description.

ELEMENTS

A. Title
B. Tick marks
C. Cartesian coordinates
D. Area graph
E. Bar graph
F. Plotting point
G. Tags
H. Scattergraph
I. Icons
J. X/Y-axes
K. Clustered bar graph
L. Text chart
M. Gantt charts
N. Grid lines
O. Icons
P. Three-dimensional graphics
Q. Exploded pie graph
R. Font
S. Legend
T. Stacked bar graph
U. Typesize
V. X-axis
W. Bullets
X. Y-axis
Y. Line graph

DESCRIPTIONS

______ 1. A graphing method that is different from a stacked bar graph.
______ 2. Symbols used to give emphasis.
______ 3. Units of measure used to plot points.
______ 4. A type of graph used to compare visually the values of two plotted lines.
______ 5. Used to plot relative points on a plane.
______ 6. Used to identify the overall concept of the graph.
______ 7. A section can be pulled away from the whole to give it added emphasis.
______ 8. The most commonly used type of graphic.
______ 9. The size of characters measured in points.
______10. Attached below the graph to explain the graph.
______11. Type of graph that is used to plot values against time.
______12. A type of graph that defines a value against time and the parts of the whole.
______13. A specific lettering style.
______14. Used to mark units of measurement.
______15. Usually represents units of time.
______16. A graph that is a line plotted between points
______17. Referred to as "scales."
______18. The most effective chart for time schedule charts.
______19. Usually represents different values of items being measured.
______20. Symbols used to represent a particular value plotted on a line.

ACTIVITY 2 (Continued)

Project 2

INSTRUCTIONS: Match the graphic examples provided by your teacher with the graphic terms provided below.

_____ 1. X-axis

_____ 2. Y-axis

_____ 3. Tick mark

_____ 4. Grid line

_____ 5. Tag

_____ 6. X/Y-axes titles

_____ 7. Icon

_____ 8. Legend

_____ 9. Title

_____ 10. Section

ACTIVITY 3: GRAPHIC DESIGN CONCEPTS

Project 1

INSTRUCTIONS: **Describe specific techniques to consider when designing bar and pie graphs and text charts.**

Bar and pie charts:

Text charts:

Project 2

INSTRUCTIONS: **Discuss specific points regarding the use of color.**

ACTIVITY 4: PRESENTATION AND FREE-DRAWING GRAPHICS

Project 1

INSTRUCTIONS: **Differentiate between presentation and free-drawing graphics.**

ACTIVITY 4 (Continued)

Project 2

INSTRUCTIONS: **Look through current computer magazines to find examples of how computer graphics are being used in the business and professional world today.**

Some examples of business and professional fields using graphics would be:

Medicine
Architecture
Music
Videos
Sports
Television
Robotics
Arts
Education
Religion
Law

ACTIVITY 5: TYPES OF GRAPHS

Project 1

INSTRUCTIONS: **From the graphic examples provided by your teacher, correctly match each type of computer graphics listed below. Place the letter from the graph in the space provided.**

_____ 1. Scattergraph
_____ 2. Line graph
_____ 3. Area graph
_____ 4. Bar chart
_____ 5. Gantt chart
_____ 6. Pie graph
_____ 7. Exploded pie graph
_____ 8. Stacked bar graph
_____ 9. Clustered bar graph
_____ 10. Three-dimensional graphics
_____ 11. Text chart

Project 2

INSTRUCTIONS: **Using the list in Project 1, look through current magazines and newspapers to find six examples of different types of computer graphics being used. Nearly every large newspaper or magazine will use a multitude of computer graphics in every issue.**

Some examples of graphic uses would be:

Weather forecasts
Sports statistics
Stock market
Business statistics
Advertisements

ACTIVITY 6: GRAPHIC HARDWARE REQUIREMENTS

INSTRUCTIONS: **Look through current computer magazines and newspapers to find advertisements for different hardware items that perform functions necessary for computer graphics. Compare and contrast features and prices.**

Some examples of hardware developments would be:

Faster computers

Advanced monitors

New variety of printers and plotters

Using film recorders

LCD projectors

On-line graphic services

ACTIVITY 7: COMPUTER GRAPHIC APPLICATIONS

INSTRUCTIONS: Look through current computer magazines and newspapers to find advertisements for different computer graphics programs. Compare and contrast their features and prices.

Some examples of graphics programs would be:

Microsoft Chart
Harvard Graphics
AutoCAD
EGA Paint 2000
Draw Applause
PC Paintbrush
Generic CAD
Others

Note: Many vendors will send brochures or even demonstration copies of their programs free of charge.

ACTIVITY 8: USING COMPUTER GRAPHICS

INSTRUCTIONS: Using the graphics program provided by your teacher, create a variety of graphic images to represent the set of data provided by your teacher.

ACTIVITY 9: CREATING GRAPHIC IMAGES

INSTRUCTIONS: Complete free-drawing graphic projects using a paint program. Get specifications from your teacher.

SECTION V: COMPUTER COMMUNICATION TOOLS

UNIT III: DESKTOP PUBLISHING

UNIT OBJECTIVE: Students will be able to prepare a document using desktop publishing techniques.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Identify desktop publishing terms.
2. Define the basic goal and historical development of desktop publishing.
3. Compare methods of traditional publishing and desktop publishing.
4. Describe the components of desktop publishing.
5. Discuss various software programs used in desktop publishing.
6. List eight basic areas of planning to consider when preparing a graphics document for desktop publishing.
7. List the guidelines for working with various graphic representations.
8. Demonstrate the tools and procedures for producing documents using available desktop publishing procedures.

FOCUS: Desktop publishing technology is becoming a very important application in today's office. A working knowledge of this technology enhances opportunities for the beginning office worker.

TERMINOLOGY

NOTE: **Some of these terms are not mentioned in the unit overview, but are frequently used in many desktop publishing software programs.**

Alignment	Similar to justification, but more inclusive when working with multiple columns.
Baseline	The imaginary horizontal line on which characters in a line of type rest.
Bleed	The technique of extending art or text in any direction over the edge of a page.
Blueline	A blocking or makeup tool used as a nonprinting guideline that does not appear in the final copy.
Border	A rule or linear design that surrounds any element of a page.
Bullets	Small black circles or other characters used in the margin to call attention to a portion of text.
CAD	Computer-aided design refers to software that is valuable in doing drawings or designs.
Camera-ready art	Art or printed material that is ready to be photographed by the printer.
Clip art	A collection of handy drawings stored on disk that can be inserted on a document.
Clipboard	A temporary storage place for text or graphics.
Copy	The written element of a publication, including text, captions, and headlines; also refers to reproducing files, documents, or parts of documents.
Cropping	Cutting off parts of an image or drawing to make it fit, or to show only selected areas.
Cut-and-paste	The technique of creating or editing a document by combining various texts and graphics.
Desktop publishing	A euphemism for the combination of typesetting and the creation of professional quality pages for reproduction.
Dialog box	A graphic device which permits a command to be selected by using a mouse.

Double-sided	A document that will be reproduced on both sides of a page.
Dummy	A mock layout showing placement of art and text.
Font	One of the many sizes and styles of type that may be available for printing.
Footer	One or more lines of text that appear at the bottom of every page.
Format	The overall layout of a printed page, including margins, columns, and type style and size.
Galley	A typeset and formatted draft used for proofreading copy.
Gray scale	The incremental range of intensity between pure black and pure white.
Greeking	Representation of text by symbolic bars or boxes that show position of the text but not the character.
Grid	A design template that divides a page with imaginary vertical and horizontal lines as an aid to placing and aligning type and graphic elements.
Headers	Text recurring at the tops of pages in a document; also words or passages used to set apart portions of text.
Helvetica	A popular sans serif typeface, also called Geneva.
Hyphenation	A feature that aids alignment by correctly breaking words that extend to another line.
Icon	An on-screen graphic representation of a tool, file, or command.
Image	A copy of a photograph or scanned document that is digitized and stored in memory or on disk.
Italic	A slanted style of a typeface.
Justification	The alignment of text at the right or left edge of a page or column.
Kerning	Adjusting the spacing between certain letters. Makes more efficient use of space and improves the appearance of a line of type.

Landscape	A printing mode in which the text or image is viewed lengthwise on the page.
Laser printer	A printer that produces a high degree of resolution by using a laser beam.
Layout	The planning and arrangement of text and graphics for a single page or an entire document.
Leaders	Dotted or dashed lines used to guide the reader's eye across horizontal space.
Leading	The amount of vertical spacing, expressed in points between two lines of type.
Mouse	A pointing device that lets the user move the cursor to select on-screen commands.
Orphans	A line of type that is separated from the rest of the paragraph by a page break.
Page	The portion of a document that will result in a page when printed.
Paste	Placing an existing picture or section of text into an area on a page.
Pasteboard	A work area that surrounds the page and is used to hold graphics and text during placement.
Pica	A unit of type measurement. Six picas equal one inch.
Pitch	The size of typed characters being used. The higher the number of the pitch, the larger the character. Another term for characters per inch.
Pixel	A single dot on a computer screen.
Point	A unit of type measurement. Twelve points equal one pica.
Pointer	A screen icon that moves in response to movement of the mouse.
Portrait	The normal printing mode in which text and images are viewed with the page oriented so that it is longer than it is wide.
Prompt	The screen icon that informs the user that the system is waiting for a command.
Proof	The final copy of a document, including graphics.

PUB	The file extension used for publication files on PC and MS-DOS computers.
Ragged	Text that is unevenly aligned on the left or right side of a column or page.
Resolution	The sharpness of an image on a screen or in printed form, measured in dots, spots, or lines per inch.
Rulers	Guidelines on the screen that aid in positioning text and pictures.
Scaling	The process of changing the size of an image, but not the proportions; it is also known as sizing.
Scanner	A device that optically reads data or images via reflected light, and converts it into machine-readable information.
Scanning	The process of converting text to a digitized form and transmitting it to the computer.
Scroll bar	An area at an edge of the screen that can be used for controlling scrolling with a mouse.
Single-sided	Pages of a document that are reproduced on one side of a sheet of paper.
Style sheet	Standard or designed layouts that can be saved on disk for use with any document.
Toner	A resinous black powder that forms the ink of laser printers and many types of copier machines.
Typeface	A particular design or style of type.
Typography	The art and science of working with type elements.
White space	The blank or unused portions of a page.
Widow	The final line of a paragraph that is separated from the rest of the paragraph by a page break.
Window	Areas that can be moved around, placed on top of one another, and removed without affecting the contents of other areas. Also, this is the name of a software product that is used with most desktop publishing programs.
Wrap	The ability to enclose text around graphic images on a page layout.

WYSIWYG	An acronym for "What you see is what you get." Generally used to describe systems that display full pages of text and graphics on screen as they will appear on the final copy.

UNIT OVERVIEW

I. Defining desktop publishing

- A. Meaning of desktop publishing
    1. Desktop publishing is a euphemism for the combination of typesetting and the creation of professional quality pages for reproduction.
    2. The term *desktop publishing* does not have any real meaning; however, Paul Braenard of Aldus Corporation coined it as follows:
        - a. The term *desktop* infers that the user can design a document at a computer on his/her desk.
        - b. *Publishing* infers that the document produced can serve as final output.
    3. A better name for desktop publishing may be *page processing*.
    4. Currently, the term *desktop publishing* is used interchangeably with *personal*, *in-house*, or *page publishing*.
    5. Everyone has been involved with desktop publishing in some form if they have put words, pictures, charts, or graphs onto a piece of paper. Generally, this has been done by "cutting and pasting."
- B. The primary goal of desktop publishing is the production of a page. The page consists of type, graphics, and other design elements that are integrated to make a whole.
- C. History of desktop publishing
    1. Printing of books began with "demand printing." Scribes could copy books by hand. Sometimes this process took more than two years to complete.
    2. Gutenberg invented the printing press. This allowed books to be created inexpensively and with much greater speed.
    3. The printing process continued to become more and more defined through the 19th and 20th centuries.
    4. New age of publishing--self-publishing
        - a. In the 1960s, computers offered new technologies for page composition and phototypesetting.
        - b. Also, in the 1960s, IBM pioneered the development of word processing.

c. Desktop publishing's birth in the mid-1980s provided the most significant change in printing since the invention of movable type.

(1) Gutenberg is credited with bringing reading to the masses.
(2) The computer is credited with bringing publishing to the masses.

d. Steven Jobs, cofounder of Apple Computer, is credited with the creation of desktop publishing.

(1) Jobs' company introduced the Macintosh and the laser printer in 1985.

(2) In 1986, he predicted that within five years every computer would be incorporating desktop publishing. DTP would be so widespread that it would be like the television--everyone will have a desktop system.

II. Comparison of traditional and desktop publishing procedures

A. Traditional publishing involves many complex operations, each carried out by a specialist:

1. Writer and editor create and shape the content.

2. A graphic designer designs the publication.

3. A typesetter sets the type.

4. A proofreader checks the copy.

5. A camera operator creates halftone screens.

6. A paste-up artist assembles all the elements into camera-ready copy for the printer.

B. Desktop publishing may only involve one person who is in charge of the entire process, and he/she:

1. Writes and edits the documents.

2. Designs the document, including selection of:

a. Layout.

b. Type face.

c. Graphic elements.

3. Proofreads.
4. Understands the printing process, including how to handle photographs.
5. Selects appropriate paper and ink.
6. Selects appropriate binding process.
7. Utilizes computers for many of the above processes.

III. Components of desktop publishing

A. Hardware

1. Computer

a. Professional-level software is written to run on IBM-PC compatibles or an Apple Macintosh.

(1) Software vendors recommend that an IBM-PC/AT or a compatible system be used, because the speed of the 80286 microprocessor is important.

(a) IBM-type systems have to assemble the components--computer makeup, monitor, and printer. Make sure they are all compatible.

(b) This open architecture structure makes the IBM more flexible, and it allows it to be easily upgraded.

(2) The Macintosh software requires at least a Macintosh Plus to work at all.

(a) The Macintosh is considered a "turn-key solution."

(b) All of the components are designed to work together.

(c) The Macintosh is less flexible as to the hardware and software that are available for use.

(d) It has "closed architecture," which means that all of the components are attached.

(3) For other microcomputers, there are personal publishing programs that are less sophisticated.

c. A hard disk drive system or two floppy disk drives are also necessary.

2. Printers eliminate numerous steps of typing and formatting a document on a phototypesetting machine.
   a. Dot-matrix printers are generally used only for proof copies, because they lack speed and quality.
      (1) It is possible to get reasonably good results with some of the newer dot-matrix printers, but the difference is noticeable, and the printing time is considerably slower.
      (2) The more dots per inch (dpi) that can be printed, the better quality the output.
   b. Ideally, a laser printer is used for desktop publishing applications, because it can produce documents that are camera-ready at one-tenth of the cost of a document produced with the traditional typesetting equipment.
      (1) Postscript printers offer greater capabilities and more flexibility. They have the Postscript language built in, which provides a great selection of fonts.
      (2) Those that do not use Postscript are usually compatible with the Hewlett-Packard family of laser printers that use Page Description Language, PDL.

3. Monitors
   a. The basic display systems are made up of two parts:
      (1) The controller card that goes in the PC.
      (2) The monitor that shows the image.
         (a) Resolution of a monitor is measured by the number of dots that are specified horizontally and vertically and the size of the screen.
         (b) There has to be a tradeoff between the speed of the system and the number of pixels or dots displayed.
   b. If an investment is made in a high-resolution screen, then a high-performance computer is needed.
   c. The professional software works with any high-resolution monitor, such as CGA (IBM color graphics adapter), IBM monochrome or Hercules compatible types, or higher-resolution types such as EGA and VGA.

d. There is not a single-standard display unit for the IBM compatible.

  (1) Low end is the **IBM CGA standard**--640 x 200 dots per inch (dpi). WYSIWYG programs that can be utilized with this screen are quite limiting. Little detail and only a small portion of the page being worked on can be seen. However, they are good for several other programs and are relatively inexpensive.

  (2) **Hercules**--720 x 348 and **EGA**--640 x 350 have similar resolutions. Both are adequate for less-frequent use and less-complex desktop publishing jobs.

    (a) Hercules monitors are monochrome and are faster than EGA monitors.

    (b) EGA (Enhanced Graphics Adapter) color monitor has a higher scanning frequency, making the monitor more expensive.

  (3) **VGA**--640 x 480 dpi, has excellent resolution and allows for a more accurate layout.

  (4) Full-page displays shows an 8 1/2" by 11" page at full size and is shaped like a rectangular page rather than square like the typical monitor.

    (a) Do not have to scroll left, right, up, or down to see the entire page.

    (b) Is easier to use on either a Mac or an IBM.

    (c) It is considered an activity enhancer.

  (5) Double-display monitors are also now available.

e. The personal publishing programs for other computers work with whatever monitor is normally used, as long as they have graphics capabilities.

4. Mouse

a. This small pointing device allows the user to easily move the pointer around the screen by moving the mouse on the tabletop. A mouse is a necessity for sophisticated desktop publishing programs.

b. Using the keyboard for moving the pointer and selecting commands is quite tedious and slows down productivity.

5. Image scanners

    a. Useful tools that will transfer photographs, illustrations, and logos into the computer so that they can be stored on a disk.

    b. Used to extend the options available with graphics.

    c. Allow a computer image of a picture to be included within a document so that the graphic can be cropped, rotated, and scaled to the appropriate size and shape.

6. **Disk storage**--most professional software cannot be run without a hard disk. Personal publishing programs will work with only diskettes, but the convenience of a hard disk is helpful.

B. Software is considered the heart of a desktop publishing operation. Deciding on software is the starting point of selecting a desktop publishing system.

1. Word processing software should be selected first.

    a. It is used to key and edit the desktop publishing document.

    b. It can be used for final output, to prepare copy for a page makeup program, or for a type format program.

    c. It must be compatible with the publishing system software.

    d. Spelling checker, text or graphics conversion programs, typeface utilities, and thesaurus are all useful features.

    e. Some high-level word processing software programs may be used for desktop publishing.

2. Graphics software is used to enhance documents with graphs, charts, pictures, line drawings, logos, page decorations, clip art, and scanned images. These images are then transferred to page layout software and into the document before printing.

    a. There are a number of popular drawing or "painting" programs. The page layout programs have some drawing tools, but they are intended mainly for editing, not for creation of graphics.

    b. Windows also has some drawing tools (and some writing tools) that can be used. Drawings produced by computer aided design (CAD) programs produce excellent results for use with desktop publishing.

    c. Graphics captured by other input devices such as scanners, fax machines, and digitizers can be incorporated into a publication as long as the image can be saved on disk in a compatible form.

3. Page makeup software packages allow the user to mix and match the text from the word processing programs with images from the graphics programs.

    a. Programs cannot function effectively without the help of other programs.

        (1) The page makeup software chosen determines how to resolve compatibility issues.
        (2) It dictates which word processor, graphic programs, utilities, and peripherals can be used.

        (3) Generally, page makeup programs should have an interface similar to other applications since there will be a lot of switching back and forth among the programs.

    b. There is a wide range of page makeup programs that vary in price from under $100 to those that cost more than $1,000. The more sophisticated the program, the more the packages cost.

    c. Two programs that dominate the business marketplace are *Aldus Pagemaker and Xerox Ventura*, which are both available for the Macintosh and IBM PC.

    d. Approaches to creating pages

        (1) Batch processing prepares the page elements before seeing it--includes text, heads, subheads, etc. Using batch processing is 90 percent planning and 10 percent execution. It defines the elements of your page in such a way that they can automatically repeat those elements and apply them again.

            (a) Setup styles for each element

                1) Define typographics, margins, page numbering, automatic generation of table of contents, and index.

                2) Run a sample page and make adjustments.

            (b) Print out entire document. Then, if there are modifications that need to be made, go back to the coding, make the adjustments, and reprint the document.

        (2) Interactive page makeup

            (a) Make choices as to type, graphics, and placement for element on each page.

            (b) Can be different on each page.

            (c) Newspapers or magazines are examples of these. Although there are certain elements that may be contained on every page, most pages are totally different from one another.

    4. Many desktop publishing packages require *Microsoft Windows* to operate. Sometimes it is included in the publishing packages.

IV. Deciding on a DTP system

A. Factors to consider before deciding if desktop publishing is needed:

1. Evaluate needs to make sure that a desktop system is really needed; this is considered the golden rule of computing.
2. Decide on what the budget will allow for the investment.
3. Select the software that fits your needs.
4. Select hardware that is compatible with the software and that will run each component.
5. Select a dealer who knows desktop publishing.
6. Get the equipment warranties in writing.
7. Get training for personnel who will be using the system.

B. What a DTP system will do for the user

1. Makes the printed material look better.
2. Gives some control over the entire print production process.
3. Reduces time and labor costs.

C. Benefits and disadvantages of desktop publishing

1. Benefits
    a. Saves time, materials, and labor.
    b. Improves communication, in that revising or updating can be done immediately by an organization.
    c. Eliminates rekeying for typeset quality documents.
    d. Provides high-quality presentations.

e. Offers better workflow control.

f. Eliminates manual cut and paste.

g. Makes security easier to maintain since documents are produced in-house.

2. Disadvantages

a. Involves a long learning curve for page layout programs.

b. Users do not have the expertise in layout and design.

D. **Assembling a system**--the choice of hardware and software is determined by needs and by budget.

1. **High end**--reviewers and consultants sometimes describe the ultimate system as a Macintosh II with a Laser Writer II, a full-page, high-resolution monitor, an 80-megabyte hard disk, a document scanner, and a digitizer, the latest version of *Pagemaker*, and a hypercard. The IBM 386 or 486 with accompanying software, printers, monitor, scanner, etc., is also now available for the high-end user.

2. **Low end**--the principles of desktop publishing can be learned with an Apple IIe or IBM-PC with a graphics monitor, two 5 1/4-inch disk drives, a dot-matrix printer, such as the Epson FX-80, and *Newsroom* as the software.

3. **The middle**--most serious personal computer users find themselves somewhere between the two ends. Publishing is a software package with numerous fonts for the Apple II series and compatibles. There are laser printers available for less than $1200. There are several inexpensive publishing programs such as *Publish It* and *First Publisher*. A mouse is a good investment if the system and software support it.

V. Operational procedures

A. Plan your publication.

1. Planning is the basis for graphics layout and design.

2. The following topics are included in the planning phase of designs:

a. Decide what messages will be communicated.

b. Decide on the audience.

c. Decide on the most effective format and means of receiving the document.

d. Check for consistency in document appearance.

e. Decide on the length of the document and the number of copies that need to be made.

f. Decide on the number of illustrations and their appropriateness with the text copy.

g. Check on the amount of money allocated for the document.

h. Decide on the document's emphasis.

B. Designing the appearance of a document is one of the most important procedures.

1. Manuals included with the software give instructions on how to design a publication. Time spent with these lessons is quite worthwhile. There is no point in running the program until there is a design from which to work.

2. Do not crowd the page; use a generous amount of white space to give the eye a rest.

3. Do not allow objects to wander over the page.

    a. Using a grid system ensures that everything lines up.

    b. A grid is the underlying structure of a page layout.

    c. A grid ensures the consistent alignment of margins, headers, footers, and columns.

    d. The grid is set up through the word processing or page layout package's margin settings, column guides, and ruler measures.

4. Graphics should be used in a purposeful manner; they should not clutter the page.

5. Only the minimum number of fonts should be used on a page.

6. Use lines or screens to differentiate parts of a page.

7. Do not use text lines that are too long for the eye to follow.

    a. Text is broken up in columns; it is important for the text to be easy to read.

    b. Instead of reducing the point size or the space between lines, words should be cut when text does not fit on a page.

8. Think about what you want to do before doing it. Get ideas from other publications.

C. Create the text and graphics.

  1. **Text**--portions of a publication are usually created with a word processing program and saved on disk.

    a. The desktop publishing programs are intended as page layout programs, and only the typing of headlines, captions, and editing is usually done directly. The body of the text is copied to the screen page from word processing files.

    b. The layout program is used to manage the placement, size, fonts, and spacing.

  2. Graphics

    a. Retrieve graphics the same way text is retrieved.

    b. Allow the program to control placement, size, dimensions, and cropping.

D. Use style sheets to save repetitious effort. These commonly used layout forms can be stored on disk and reused or altered as needed.

  1. Style sheets are somewhat like templates, in that layout information can be stored, but without the text or graphics.

  2. Several programs include a number of predesigned style sheets.

E. Manipulate document on the screen.

  1. Unless one has a full-page screen, much scrolling back and forth is usually needed, using a mouse (or selected keys if no mouse is attached).

  2. To work on a small area for editing or drawing, there are zoom commands that enlarge a small portion of the screen.

  3. A section of the work can be identified and then moved as a unit to another location.

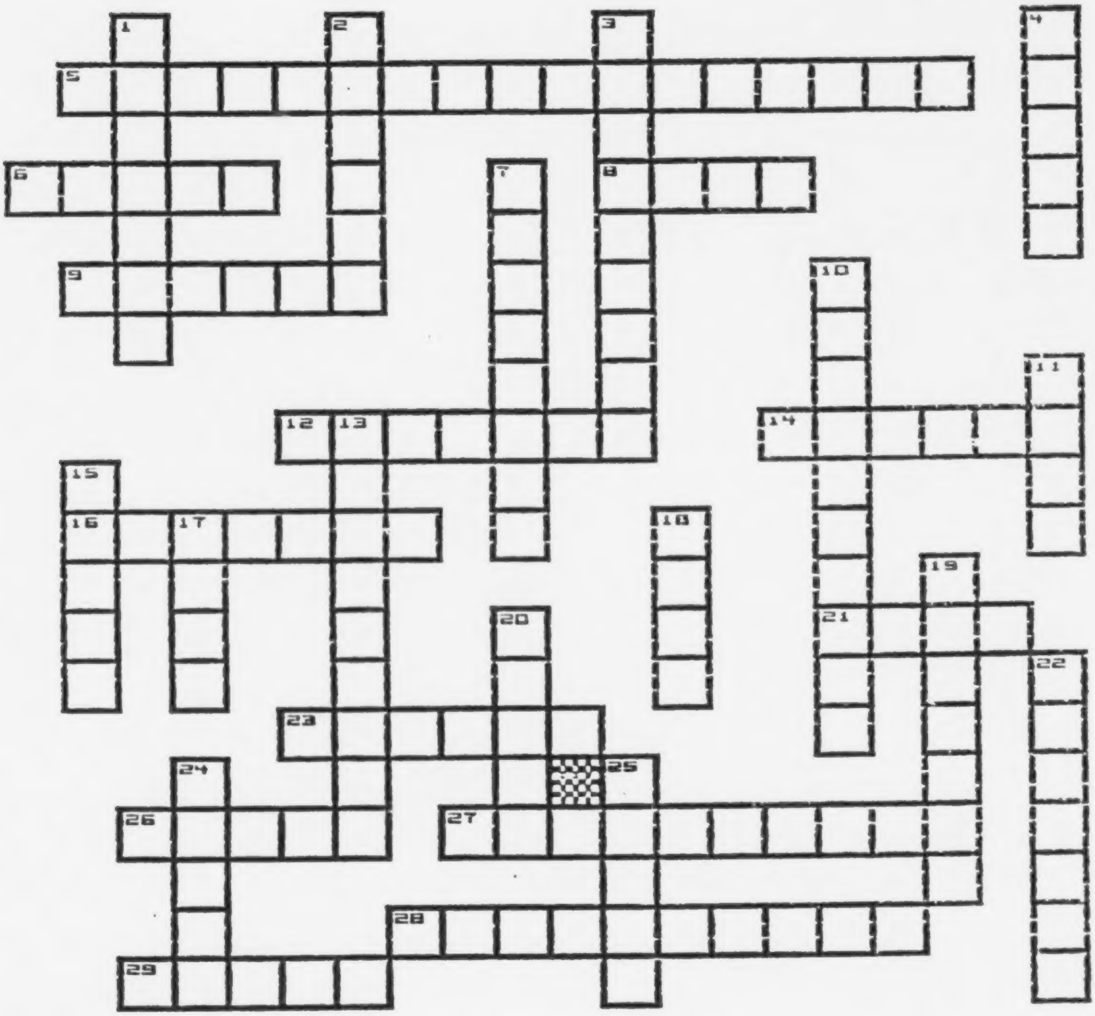
F. Use page layout software to create headlines and captions.

G. Print the document.

  1. The final product can be directed to the printer, or it can be saved on a disk and moved to another computer for printer access.

  2. A laser printer should be used to achieve the best results.

ACTIVITY 1: TERMINOLOGY CROSSWORD PUZZLE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ACTIVITY 1: TERMINOLOGY CROSSWORD PUZZLE CLUES

ACROSS CLUES

1. A euphemism for the combination of typesetting and the creation of professional quality pages for reproduction.
6. The final line of a paragraph that is separated from the rest of the paragraph by a page break.
8. A design template that divides a page with imaginary vertical and horizontal lines as an aid to placing and aligning type and graphic elements.
9. The screen icon that informs the user that the system is waiting for a command.
12. A collection of handy drawings stored on disk that can be inserted on a document.
14. A rule or linear design that surrounds any element of a page.
16. A line of type that is separated from the rest of the paragraph by a page break.
21. A unit of type measurement. Six equal one inch.
23. The planning and arrangement of text and graphics for a single page or an entire document.
26. Placing an existing picture or section of text into an area on a page.
27. The sharpness of an image on a screen or in printed form, measured in dots, spots, or lines per inch.
28. Standard or designed layouts that can be saved on the disk for use with any document.
29. The final copy of a document, including graphics.

DOWN CLUES

1. Text recurring at the tops of pages in a document; also words or passages used to set apart portions of text.
2. The overall layout of a printed page, including margins, columns, and type style and size.
3. Similar to justification, but more inclusive when working with multiple columns.
4. The blank space or unused portions of a page.
7. The normal printing mode in which text and images are viewed with the page oriented so that is longer than it is wide.
10. The art and science of working with type elements.
11. The ability to enclose text around graphic images on a page layout.
13. A printing mode in which the text or images are viewed lengthwise on the page.
15. A unit of type measurement. Twelve points equal one pica.
17. The portion of a document that will result in page when printed.
18. Another name used to indicate cutting off parts of an image or drawing to make it fit, or to show only selected areas.
19. The process of changing the size of an image, but not the proportions; it is also known as sizing.
20. A pointing device that lets the user move the cursor to select on-screen commands.
22. An acronym for "What you see is what you get."
24. A printer that produces a high degree of resolution by using a laser beam.
25. A resinous black powder that forms the ink of laser printers.

ACTIVITY 2: GOAL AND HISTORICAL DEVELOPMENT OF DESKTOP PUBLISHING

Project 1

INSTRUCTIONS: Define desktop publishing, and describe its basic goal.

Project 2

INSTRUCTIONS: Outline the historical development of desktop publishing.

ACTIVITY 3: COMPARISON OF TRADITIONAL PUBLISHING AND DESKTOP PUBLISHING METHODS

INSTRUCTIONS: In the two columns below, list and compare traditional and desktop publishing procedures.

TRADITIONAL	DESKTOP

ACTIVITY 4: COMPONENTS OF DESKTOP PUBLISHING SYSTEMS

Project 1

INSTRUCTIONS: **List the components of desktop publishing.**

Hardware components

1.

2.

3.

4.

5.

6.

Software components

1.

2.

3.

ACTIVITY 4 (Continued)

Project 2

INSTRUCTIONS: You will be given either $3,000 or $10,000 to purchase a desktop publishing system. Investigate available hardware and software through the use of periodicals, visits to local computer stores, writing to major companies, and other resources. Using both of the allotted amounts above, select the components of a desktop publishing system that will meet each budget. Verify your selections by including pictures of the components and supplying prices and other specifications.

ACTIVITY 5: DESKTOP PUBLISHING SOFTWARE PROGRAMS

INSTRUCTIONS: **Write a paragraph describing each of the three major types of software needed in order to operate desktop publishing programs.**

1.

2.

3.

ACTIVITY 6: PLANNING A DESKTOP PUBLISHING DOCUMENT

Project 1

INSTRUCTIONS: **List the eight basic areas of planning to consider when preparing a graphics document for desktop publishing.**

1.

2.

3.

4.

5.

6.

7.

8.

ACTIVITY 6 (Continued)

Project 2

INSTRUCTIONS: **Following the planning steps listed in Project 1, plan a group project from the list of projects provided by your teacher.**

ACTIVITY 7: GUIDELINES FOR GRAPHIC REPRESENTATIONS

INSTRUCTIONS: **List the six guidelines for working with various graphic representations.**

1.

2.

3.

4.

5.

6.

ACTIVITY 8: DESKTOP PUBLISHING DOCUMENT PRODUCTION

Project 1

INSTRUCTIONS: Work as a team to design a one-page document using the ideas provided by your teacher. Type the document, and make any corrections, using liquid correction fluid. Find an appropriate graphic. Cut and paste the page so that it is camera-ready. Make two copies.

Project 2

INSTRUCTIONS: Working as a team, take the page layout that you designed in Project 1, and use a word processing program to develop the text and a graphics or clip art program for the graphics. Integrate them into the desktop publishing program provided by your teacher. Print a copy. Discuss the desktop publishing techniques you used in a brief, written report.

Project 3

INSTRUCTIONS: With the results of your group planning session in Activity 6, Project 2, have each member of the group develop a document using desktop publishing techniques.

Project 4

INSTRUCTIONS: Develop a complete project applying proper desktop publishing techniques for planning, designing, and setup using either your ideas or those suggestions provided by your teacher.

SECTION V: COMPUTER COMMUNICATION TOOLS

UNIT IV: BUSINESS APPLICATION SOFTWARE

UNIT OBJECTIVE: Students will use various utility and productivity programs to enhance their use of the computer.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Define utility programs.
2. Identify the use of several utility programs.
3. Use utility programs to enhance computer management techniques.
4. Identify and describe various types of productivity software.
5. Load, access, and use two productivity programs.

FOCUS: Manipulating data in various ways is generally accomplished through typical application programs. However, there are needs for disk management procedures, methods of retrieving lost data, and ways of saving time that make the worker move productive.

UNIT OVERVIEW

I. Utility programs

   A. Characteristics

      1. Brief, inexpensive, single-task programs that perform various useful functions.

      2. Allow the computer to work faster and more efficiently.

   B. Print spoolers

      1. Purpose

         a. Provide a partial solution for saving computer time when printing out long files.

         b. Designate part of the computer's memory as a print buffer.

            (1) When a print command is issued, data are printed to the specified memory area.

            (2) Computer relays the data to the printer and returns the rest of the memory to the control of the computer so that other files can be processed.

         c. Allow the computer to do two things at the same time: print data in the background while another file is worked on in the foreground.

      2. Procedure takes more time to access file, because the computer is waiting for the CPU to be released from printing.

   C. RAM disks

      1. Defined as software that set aside part of the computer's memory for the storage of programs and data files.

         a. If you have a one-disk-drive system, the drive is A, and the memory is called B.

         b. The program treats this area of memory as if it were a second disk drive.

            (1) If the computer is turned off, the data in this area will be lost.

(2) However, data can be stored and retrieved more quickly--a feature that makes it valuable for certain applications.

2. Disk-based program

a. Only the core of the program is in memory the entire time.

b. Only accesses the disk for overlays when they are needed.

(1) Program stops momentarily.

(2) Disk drive spins while the overlay is moved from the disk into memory.

c. Speed is increased with RAM disks.

D. Keyboard enhancers are used to customize the computer keyboard.

1. Redefine the original use or meaning of the keys.

a. When the redefined key is pressed:

(1) Program intercepts the signal.

(2) Signal converts to the newly assigned meaning of the key.

(3) New signal is sent to the computer.

b. Can redefine all of the keys, changing the keyboard from the typical QWERTY design to a DVORAK design.

2. Keyboard macros

a. Defined as a series of keystrokes assigned to a single key to save time.

b. File can be saved so that it can be repeated, sometimes saved as files in themselves, so the macros can be utilized without programs.

c. Once the key is assigned, the ALT or CONTROL keys may be used to execute the command.

E. Other utility programs

1. File-encryption programs

a. Encrypted, or encoded, data stored on disks or transmitted over telephone lines cannot be retrieved by users without a password.

b. Deemed important to those using hard disk systems and on networks where a number of people have access to data files.

c. Encryption systems in use

(1) Hardware-based

(2) Software-based

(3) Combination of hardware and software

d. U.S. Data Encryption Standard (DES) primarily used on mainframes and sometimes on microcomputers.

2. File-conversion programs convert files created on one program or operating system so that they can be run on another.

3. File indexes are used to print out lists of files stored on disks.

a. List files in sorted order.

b. Provide comments, including the date the files were created.

c. File sizes added.

4. File-recovery programs

a. Restore files that have been inadvertently deleted from a disk.

(1) Erase command deletes the first character in the file name from the disk directory.

(2) All of the other data are left intact until another file is saved on top of it.

b. When the mistake is discovered in time, the file can be restored to the directory so that it can be retrieved.

5. Copy-protection programs ensure that a disk cannot be copied by other users.

II. Productivity programs

A. Project management

1. Defined as the systematic overseeing of the progression of a project so that it is completed both on schedule and within the budget.

2. Answers questions which are difficult to resolve, especially when the project is complex or when there are other projects conducted simultaneously. Provides information regarding:

   a. The earliest the project can be completed.

   b. The cost to do it faster.

   c. Best means of organization of the project steps and the staff needed to complete the stages.

   d. Initiation and completion time for each stage.

   e. Latest date a final decision can be made about the project.

   f. The effects of the timing of the various project stages and the cash flow.

   g. Personnel requirements and scheduling.

3. Used in every area of business but has been extensively used in the construction and defense industries. Very sophisticated analytical techniques are used to help gather, organize, and manipulate project management data.

   a. The sequence, timing, and costs of thousands of individual steps require coordination and control.

   b. Techniques include critical paths, PERT (program evaluation and review) charts, Gantt charts, and crashing schedules.

   c. Used for only very expensive projects.

   d. First used primarily on mainframes, and now they are used on microcomputers.

   e. Little expertise is needed in operating these programs.

4. Rules of project management

   a. Concerned with three variables

      (1) Break the project down into stages or tasks and key events, or milestones. Define the project's number of tasks and at least two milestones--a beginning and an end.

(2) Organize stages into a logical sequence, with a starting date and duration determined for each step.

(3) Calculate costs frequently related to when tasks are done and how long they take.

b. Traditionally, project planning has been time-consuming and expensive, especially when the schedule needs to be optimized or to explore "what-if" questions.

5. Questions to ask when scheduling a project so that one knows immediately what the impact would be on the budget and completion date of the project:

a. What if some steps can be completed faster?

b. What if some steps take longer than expected?

c. What if the budget is cut for some of the project?

6. Means of improving a project's schedule

a. The critical path

(1) Know the sequence in which tasks must be completed and how long each one takes. You can then find a series of tasks that are sequential and interdependent.

(2) Each subsequent task cannot be begun until the previous one is completed.

(3) The dependent tasks are laid out end to end; they form the project's critical path.

Example: The signature cannot be put on a letter until the letter's body parts have been completed. A roof cannot be put on a house until the walls are up.

b. "Crashing" schedules, or speeding up a project

(1) Accomplished by changing the dates on the critical path.

(a) To complicate matters, an existing critical path may result in another path becoming critical; therefore, changes may require rapid completion of tasks on the new critical path.

(b) Specific tasks can sometimes be accomplished by spending additional money and cutting funds allocated for other tasks.

(2) The order, timing, and cost of individual tasks are interrelated. They all affect the total cost of the project and its final completion date.

(3) This minimizes the time and costs associated with a project. A careful analysis of each step in the process is required.

c. Graphics

(1) Generate two basic types of graphics if the manager has entered the beginning dates and duration of all tasks.

(a) PERT charts show the relationship of the individual task and milestones in a project and the flow of the project.

(b) Gantt charts use bars and a time line to illustrate the beginning and ending dates of each task making up the project

(2) Often used to show the complex relationship in the timing and sequence of a project.

B. Desktop managers

1. Defined as personal productivity tools.

a. These are all accessed while in another program.

b. They are really integrated systems, because they combine different functions.

2. Procedures for use

a. Program is loaded into the computer before loading other application program.

(1) Can be displayed on the screen even when working on other programs.

(2) Accessed by pressing a few keys.

b. The menu, which lists the available functions, can be displayed by pressing just two keys.

c. Operations of the other program is suspended when in desktop manager. When another key is pressed, the desktop manager leaves, and the screen returns to the program.

d. Highlight the function on the menu, and press the return key.

3. Allow data to be moved into and out of windows and programs.

4. Common features include:

    a. Calendars for scheduling meetings.

    b. Calculators, which provide the same capabilities of a hand-held calculator.

    c. Notebooks to write brief notes.

    d. Phone directories to keep an updated list of phone numbers.

    e. Auto dialer, used in conjunction with a Hayes Smartmodem or compatible modems.

    f. ASCII table.

    g. Timing devices with alarms.

5. Personalize a microcomputer system for its user; system begins to reflect the habits of the user.

6. Software examples are: *Sidekick*, *Apple Macintosh Desktop Accessories*, and *Deskmate*.

C. Idea processor

1. Defined as a program that helps to gather and organize ideas.

    a. It is similar to jotting down notes as they come to mind.

    b. Written on notepads, restaurant napkins, business cards, and almost every other conceivable place.

2. Methods

    a. Traditional

        (1) Generate ideas.

        (2) Collect ideas.

        (3) Organize ideas.

b. Breaks them down into steps or topics.

3. Uses

   a. Quickly reorganizes ideas and topics.

   b. Easily adds new topics and deletes unnecessary topics.

   c. Combines related topics.

   d. Breaks page topics into subtopics.

4. Programs

   a. The first idea processor was *Think Tank*, which allows ideas to be entered, moved, and inserted to reorganize them in outline form.

   b. *Framework*, an integrated program, can also be used as an idea processor. It organizes and reorganizes frames in an outline.

      (1) Some ideas can be expressed best in words, others in numbers, lists, or graphs.

      (2) Functions allow the most appropriate form to be selected.

ACTIVITY 1: UTILITY PROGRAMS

Project 1

INSTRUCTIONS: **Define utility programs.**

Project 2

INSTRUCTIONS: **Using available periodicals, make a list of the advertised utility programs. If possible, write a one- or two-sentence description of each one.**

ACTIVITY 2: IDENTIFICATION OF UTILITY PROGRAMS

INSTRUCTIONS: Match the utility program with its description.

PROGRAM DESCRIPTION

_____ 1. Single-task programs that perform various useful functions.

_____ 2. Uses a portion of the computer's memory for storage of programs and data files.

_____ 3. Uses the DES.

_____ 4. Allows files to be used in more than one program or with one operating system.

_____ 5. Lists files in sorted order.

_____ 6. Restores files.

_____ 7. Ensures that a disk cannot be duplicated.

_____ 8. Saves computer time when printing out long files.

PROGRAM

A. File indexes
B. File conversion
C. File encryption
D. RAM disk
E. Print spoolers
F. Copy-protection
G. Keyboard enhancers
H. Utilities
I. File recovery

ACTIVITY 3: USING UTILITY PROGRAMS

INSTRUCTIONS: **Using the utility programs and instructions provided by your instructor, perform the tasks assigned.**

ACTIVITY 4: TYPES OF PRODUCTIVITY SOFTWARE

Project 1

INSTRUCTIONS: **Identify the type of productivity software described below. Each type of software may be used more than once.**

________________ 1. Techniques that include critical paths, PERT, and Gantt charts, and crashing schedules.

________________ 2. Contains a calculator, notepad, ASCII chart, etc.

________________ 3. A program that helps to gather and organize ideas.

________________ 4. Program that is loaded into the computer before other applications.

________________ 5. Used primarily in the construction and defense industry.

________________ 6. Personalizes the computer for the user.

________________ 7. *Sidekick.*

________________ 8. The systematic overseeing of the progression of a project so that it is completed on schedule and within the budget.

________________ 9. Traditional method of collecting data was to jot down notes.

________________ 10. *Think Tank.*

Project 2

INSTRUCTIONS: **Using current computer magazines, research several new productivity programs. Write a paper discussing two of the programs, and then share your findings with the class.**

ACTIVITY 5: USING PRODUCTIVITY PROGRAMS

INSTRUCTIONS: **Load, access, and use two productivity programs provided by your teacher, using the instructions provided.**

SECTION VI

SOCIAL IMPLICATIONS OF COMPUTER USAGE

ESSENTIAL ELEMENT

75.87 (e)(6)

6. Concepts and skills associated with the social implications of computers. The student shall be provided opportunities to:

   A. Examine issues concerning responsible use of computer systems; and

   B. Understand the social ramifications of computer applications related to privacy, values, and reliability of systems.

SUGGESTED UNIT LESSON PLAN

SECTION VI: SOCIAL IMPLICATIONS OF COMPUTER USAGE

UNIT I: SOCIAL IMPLICATIONS

ESSENTIAL ELEMENT: 75.87 (e)(6)(A)(B)

ALLOCATED TIME: 5 Hours

UNIT OBJECTIVE: Students will describe the issues related to the responsible use of computer systems, appraise the social ramifications of computer usage by society, and identify responsible practices in the use of computers.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Identify terminology related to computer crime, computer users, and new computer devices and techniques.
2. Identify the major issues and technological developments related to computers and society.
3. Describe the ethical and legal issues that have arisen as a result of the computer revolution.
4. Identify privacy issues involved with electronic data storage.
5. Explain the reasons for concern about the reliability of computer systems.

FOCUS: Using a computer is like using a piece of powerful machinery such as an automobile. Most people use computers harmlessly and responsibly, but if the user is irresponsible, careless, or malicious, the effects of decisions and actions can be far-reaching and damaging. Computers have caused so many changes in the way we live and work that society is totally dependent upon them (as it is on the automobile). The first step toward responsible use of computers is understanding the scope and implications of the relationship between society and technology.

DOMAINS: Activities and competency tests have been designed to provide learning experiences utilizing the affective, cognitive, and/or psychomotor domains. Activities and competency tests are coded on the Activity and Competency Test Matrices.

BASIC SKILLS: Activities and competency tests have been designed to reinforce the basic skills of reading, writing, and/or mathematics. Activities and competency tests are coded on the Activity and Competency Test Matrices.

CONTENT OUTLINE

I. General issues
    A. Dependency
    B. Nameless society
    C. Technological developments
    D. Viral epidemics
II. Legal and ethical issues
    A. Computer crime
    B. Data spying
    C. Hackers
    D. Employees or former employees
    E. Piracy
    F. Laws involving computer and software usage
III. Privacy issues
    A. Destination of copies
    B. Originator of data
    C. Credit bureaus
    D. Data banks
    E. Paperless offices
IV. Reliability of systems
    A. Hardware
    B. Software
    C. Storage media
    D. People
    E. Confidentiality
    F. Accuracy

SUGGESTED TEACHER ACTIVITIES

General Teacher Preparation

1. Preview the unit.
2. Review unit objectives.
3. Make instructional analysis.
4. Assess student learning needs.
5. Decide on lesson domain: cognitive, psychomotor, or affective domain.
6. Select instructional materials based on instructional analysis and student learning needs.
7. Select instructional strategies based on lesson content and student learning needs.
8. Prepare lesson plans from the unit lesson.
9. Prepare additional instructional material.
10. Reserve necessary media and equipment.

Teacher Presentation

1. Present student objectives.
2. Establish rapport with students.
3. Review lesson objectives with students.
4. Relate lesson to prior or future learning.
5. When appropriate, encourage student interaction through questioning, discussions, or some other strategy.
6. Emphasize the value/importance of the unit or activity.
7. Allow time for closure of a lesson.

Reteach Activities

1. Identify area(s) of weakness from results of evaluation.
2. Select unit activities not previously used.
3. Use additional resources and/or create materials based on student learning needs.
4. Use a different teaching strategy in reteaching.
5. Retest.

Specific Teaching Activities

1. Obtain a copy of the movie *War Games* or another computer-related movie to show in your classroom. The movie *War Games* shows how dangerous "hacking" can be. Discuss with the students the ramifications of computer hacking.

2. Since computer crime and computer ethics have become very important lately, you may wish to have an open discussion before presenting the unit. Using this method, you can decide how much the students already know about the material.

3. The laws that are used in Activity 3, Project 2, were difficult to locate. You may wish to have a guest speaker come to class and give the students an overview of the different laws concerning computer crime and related topics. If you are unable to do this, you can obtain a photocopy or a copy of the *Texas Penal Code* from your local police department. Other laws may be found in history books, publications from the U.S. Government, and periodicals.

4. Prepare a bulletin board that relates to this unit. Ask the students to bring in articles they find in newspapers or periodicals about responsible use of computers and the ramifications that are related to the topic. You may wish to award extra points to the students who participate in this activity.

5. Plan a visit to the school library to search for information about computers and privacy, or legal issues.

ACTIVITY MATRIX

Activities	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
1	X			X		
2 Project 1	X				X	
Project 2	X				X	
Project 3	X				X	
3 Project 1	X				X	
Project 2	X				X	
Project 3	X				X	
4	X				X	
5	X				X	

COMPETENCY TEST MATRIX

Parts	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
I	X			X		
II Project 1	X				X	
Project 2	X			X		
III Project 1	X				X	
Project 2	X				X	
IV	X				X	
V	X				X	

COMPETENCY TEST

PART I: TERMINOLOGY

INSTRUCTIONS: Fill in the blank with the correct term.

____________________ 1. A program that mimics the decision-making logic of human experts.

____________________ 2. A field of study involving techniques under which computers can formulate responses on the basis of content of accumulated and experience-related information.

____________________ 3. Any illegal act for which knowledge of computer technology is used to commit the offense.

____________________ 4. The unauthorized copying of a computer program written by someone else.

____________________ 5. The science that deals with robots, their construction, capabilities, and applications.

____________________ 6. A term describing data that has been translated into a secret code for security reasons.

____________________ 7. The final phase of the virus life cycle.

____________________ 8. A form of illegal access to data.

____________________ 9. An information-producing system aimed at a particular decision a manager must make.

____________________ 10. The current compact disks for computers, similar to read-only memory.

____________________ 11. The time delay between initial system infection and virus activation.

____________________ 12. A way in which the "spirit" of some laws are applied to computer-related activities.

____________________ 13. The process of self-isolation within the current host program and attachment of the isolated segment to a new host.

____________________ 14. Program that watches for typical things viruses do.

PART I (Continued)

____________________ 15. A virus that leaves no external signs of its presence after infection.

____________________ 16. The process a virus uses to identify and distinguish itself from its host system.

____________________ 17. A term that implies that all paper documents have been replaced by electronic media and devices.

____________________ 18. The invasion of a virus into a host system.

____________________ 19. A computer enthusiast who is challenged by the practice of breaking computer security measures.

____________________ 20. A training method that uses a response pad and an interconnection box.

____________________ 21. An original virus design.

____________________ 22 The remains of a virus after activation.

____________________ 23. The program to which the virus attaches itself.

____________________ 24. A modification of a viral strain that results in a slightly different functionality.

PART II: GENERAL ISSUES

Project 1

INSTRUCTIONS: Answer the following questions.

1. How do computer dependency and the nameless society affect you?

2. How are each of the following used?
   1) Artificial intelligence:
   2) Robotics:
   3) CD-ROM:
   4) Hypergraphics:

PART II (Continued)

Project 2

INSTRUCTIONS: **Fill in the blank with the correct term.**

_______________ 1. A segment of machine-language code that replaces software or data with a copy of itself, without authorization.

_______________ 2. A virus that checks for a certain action.

_______________ 3. A type of virus that was created to spread a greeting of world peace.

_______________ 4. A programmer's placement of unauthorized instructions in a computer operating system for future use in gaining access to restricted information.

_______________ 5. Replaces the original boot sector with itself; causes loss of data.

_______________ 6. A virus that breaks down the directory section, making it impossible for a disk's contents to be read.

_______________ 7. Infects any application; loss of data due to system crashes.

_______________ 8. A segment of code that allows data to be transmitted to the legitimate operator while other data are transferred to an illegal operator.

_______________ 9. Programs that use network connections to spread from system to system.

_______________ 10. Replaces original boot sector with itself; spreads quickly to all bootable disks.

_______________ 11. A virus that checks for a specific date or time.

_______________ 12. Infects any .COM or .EXE program.

_______________ 13. Appears in many different varieties.

_______________ 14. Infects COMMAND.COM file.

PART III: LEGAL AND ETHICAL ISSUES

Project 1

INSTRUCTIONS: **Answer each of the following questions.**

1. In your own words, define computer crime, and explain why this type of crime is difficult to prosecute.

2. Name three types of computer crime and discuss what you think should be done to stop the crimes.

    1)

    2)

    3)

PART III (Continued)

Project 2

INSTRUCTIONS: Explain in a short paragraph one of the laws that you researched concerning computers.

PART IV: PRIVACY ISSUES

INSTRUCTIONS: List in order of importance those items which you feel could improve privacy for credit bureaus, data banks, and paperless offices.

PART V: RELIABILITY OF SYSTEMS

INSTRUCTIONS: Answer the following questions.

1. List three (3) types of computer hardware.

    1)

    2)

    3)

2. What is the best protection to use against software failure?

3. Name four (4) types of storage media.

    1)

    2)

    3)

    4)

4. How can accuracy of data be improved?

ANSWERS TO ACTIVITIES

Activity 1

```
COMPUTERETHICS     P
      X       H    A
 ENCRYPTION H A    P
      E     O C    E
HYPERGRAPHICS K NVIR
    E T     T E    L
    P S     PIRACY E
    L Y     R      S
  T I S NETWORKWORMS
  I C T     G      O
  M A E   CDROM    F
  E T M     A      F
  B I       M      I
 ROBOTICS    V     C
  M N    TROJANHORSE
  B          C
             C
      SCORESVIRUS
             N
       VIRUSREMNANT
```

Activity 2

<u>Projects 1-2</u> Evaluated to the satisfaction of the instructor.

<u>Project 3</u> Answers may vary.

Robotics:	The science that deals with robots, their construction, capabilities, and applications. This technology can be used as: mail carriers or aides for the handicapped.
Artificial Intelligence:	A field of study involving techniques under which computers can formulate responses on the basis of content of accumulated and experience-related information. This technology can be used in: decision support systems and expert systems.
CD-ROM:	The current compact disks for computers, similar to read-only memory; they cannot be erased or recorded on. This technology can be used for archival storage.
Hyper-graphics:	A method used in classrooms or in-service training that involves the participants, the teacher, and the computer through the use of a response pad and an interconnection box. This technology can be used as a training device.

Activity 3

Projects 1-3 Evaluated to the satisfaction of the instructor.

Activity 4 Evaluated to the satisfaction of the instructor.

Activity 5 Answers may vary.

1.
   1) Microcomputers
   2) Minicomputers
   3) Mainframes
   4) Keyboards
   5) Monitors
   6) Printers
2. Back up copies and taking care of the disks.
3.
   1) Magnetic tape
   2) Diskettes
   3) Hard disks
4. Evaluated to the satisfaction of the instructor.

COMPETENCY TEST ANSWERS

Part I

1. Expert systems
2. Artificial intelligence (AI)
3. Computer crime
4. Piracy
5. Robotics
6. Encryption
7. Activation
8. Data spying
9. Decision support system
10. CD-ROM
11. Activation period
12. Computer ethics
13. Replication
14. Vaccine
15. Hidden virus
16. Isolation
17. Paperless office
18. Infection
19. Hacker
20. Hypergraphics
21. Viral strain
22. Virus remnant
23. Host program
24. Viral variety

Part II

Project 1 Evaluated to the satisfaction of the instructor.

Project 2

1. Computer virus
2. Logic Bomb
3. Peace virus
4. Trojan Horse
5. Alameda virus
6. Datacrime
7. Scores virus
8. Trap Door
9. Network worms
10. Pakistani Brain virus
11. Time Bomb
12. Israeli virus
13. nVIR
14. Lehigh virus

Part III

Projects 1-2 Evaluated to the satisfaction of the instructor.

Part IV Evaluated to the satisfaction of the instructor.

Part V Answers may vary.

1. 1) Monitors
   2) Keyboards
   3) Printers

2. Make backup copies and protect the disks.

3. 1) Magnetic tape
   2) Diskettes
   3) Hard disks
   4) Disk packs

4. Evaluated to the satisfaction of the instructor.

COMPETENCY CHECKLIST

ESSENTIAL ELEMENT: 75.87 (e)(6)(A)(B)

Student shall be provided opportunities to examine issues concerning responsible use of computer systems, and understand the social ramifications of computer applications related to privacy, values, and reliability of systems.

OBJECTIVE:	**Student will describe the issues related to the responsible use of computer systems, appraise the social ramifications of computer usage by society, and identify responsible practices in the use of computers.**	MASTERY	NON-MASTERY
1.	**Identify terminology related to computer crime, computer users, and new computer devices and techniques.**	________	________
2.	**Identify the major issues and technological developments related to computers and society.**	________	________
3.	**Describe the ethical and legal issues that have arisen as a result of the computer revolution.**	________	________
4.	**Identify privacy issues involved with electronic data storage.**	________	________
5.	**Explain the reasons for concern about the reliability of computer systems.**	________	________
		________	________
		________	________

STUDENT NAME____

SECTION VI: SOCIAL IMPLICATIONS OF COMPUTER USAGE

UNIT I: SOCIAL IMPLICATIONS

UNIT OBJECTIVE:

Students will describe the issues related to the responsible use of computer systems, appraise the social ramifications of computer usage by society, and identify responsible practices in the use of computers.

STUDENT COMPETENCIES:

After completing this unit, the student will be able to:

1. Identify terminology related to computer crime, computer users, and new computer devices and techniques.
2. Identify the major issues and technological developments related to computers and society.
3. Describe the ethical and legal issues that have arisen as a result of the computer revolution.
4. Identify privacy issues involved with electronic data storage.
5. Explain the reasons for concern about the reliability of computer systems.

FOCUS:

Using a computer is like using a piece of powerful machinery such as an automobile. Most people use computers harmlessly and responsibly, but if the user is irresponsible, careless, or malicious, the effects of decisions and actions can be far-reaching and damaging. Computers have caused so many changes in the way we live and work that society is totally dependent upon them (as it is on the automobile). The first step toward responsible use of computers is understanding the scope and implications of the relationship between society and technology.

TERMINOLOGY

Activation	The final phase of the virus life cycle.
Activation period	The time delay between initial system infection and virus activation.
Alameda virus	Replaces the original boot sector with itself; causes loss of data.
Artificial Intelligence (AI)	A field of study involving techniques under which computers can formulate responses on the basis of content of accumulated and experience-related information.
CD-ROM	The current compact disks for computers, similar to read-only memory; they cannot be erased or recorded on.
Computer crime	Any illegal act for which knowledge of computer technology is used to commit the offense.
Computer ethics	A term used to refer to the standard of moral conduct in computer use; a way in which the "spirit" of some laws are applied to computer-related activities.
Computer virus	A segment of machine-language code that replaces software or data with a copy of itself without authorization.
Datacrime	A virus that breaks down the directory section, making it impossible for a disk's contents to be read.
Data spying	A form of illegal access to data.
Decision support a **system**	An information-producing system aimed at a particular decision a manager must make.
Encryption	A term describing data that has been translated into a secret code for security reasons.
Expert system	A program that mimics the decision-making logic of human experts.
Hacker	A term used to describe computer enthusiasts who are challenged by the practice of breaking computer security measures designed to prevent unauthorized access to a particular computer system.
Hidden virus	A virus that leaves no external signs of its presence after infection.
Host program	The program to which the virus attaches itself.

Hypergraphics	A method used in classrooms or in-service training that involves the participants, the teacher, and the computer through the use of a response pad and an interconnection box.
Infection	The invasion of a virus into a host system.
Isolation	The process a virus uses to identify and distinguish itself from its host program.
Israeli virus	Infects any .COM or .EXE program; some versions destroy all data on the hard disk; stored programs will disappear.
Lehigh virus	Infects COMMAND.COM file; causes loss of all data on hard disk.
Logic Bomb	A virus that checks for a certain action, such as if an infected program has been executed a preset number of times.
Network worms	Programs that use network connections to spread from system to system, thus network worms attack systems that are linked via communication lines. It can behave like a virus, or it can plant a virus.
nVIR	Appears in many different varieties, each with its own individual activation characteristics. Causes loss of data and programs; causes frequent system crashes.
Pakistani Brain virus	Replaces original boot sector with itself; system crash can cause loss of data; spreads quickly to all bootable disks.
Paperless office	A term that implies that all paper documents have been replaced by electronic media and devices.
Peace virus	A type of virus that was created to spread a greeting of world peace and then erases its own instructions, disappearing without a trace.
Piracy	The unauthorized copying of a computer program written by someone else.
Replication	The process of self-isolation within the current host program and attachment of the isolated segment to a new host.
Robotics	The science that deals with robots, their construction, capabilities, and applications.
Scores virus	Infects any application; loss of data due to system crashes.

Time Bomb	A virus that checks for a specific date or time (such as Friday the 13th) before executing its objective.
Trap Door	A segment of code that allows data to be transmitted to the legitimate operator while other data are transferred to an illegal operator.
Trojan Horse	A programmer's placement of unauthorized instructions in a computer operating system for future use in gaining access to restricted information.
Vaccine	Program that watches for typical things viruses do, halts them, and then warns the computer operator.
Viral strain	An original virus design, distinct from other viruses by its internal structure.
Viral variety	A modification of a viral strain that results in a slightly different functionality.
Virus remnant	The remains of a virus (if any) after activation.

UNIT OVERVIEW

I. **General issues**--as computers do more and more work in society, new social issues and questions continue to emerge. Many questions arose during the period when large mainframes took over data management in banks, insurance companies, financial institutions, and other large corporations; others appeared with the proliferation of microcomputers. Some of the effects of computers are felt by all of us.

A. Dependency

1. Anyone who has had to wait for several minutes because "the computer is down" while trying to make a credit card purchase at a retail store knows what it means to be dependent on computers.

2. Not learning the status of a credit card account is minor compared to the failure of the police or fire department emergency computer system or of an airline reservation system.

3. In the situations above, the manual substitute, or backup, is totally unsatisfactory, and these functions can be said to be "computer dependent."

4. There are dozens of ways in which our daily activities could be crippled by computer failure.

B. Nameless society

1. Can we accept being identified by a number instead of a name?

   a. We are known to some organizations by our social security number, to others by our driver's license number, and to others by an account number.

   b. If we respond to a computerized billing error, we have no assurance that a human will ever see the response.

2. It is unclear what effects this namelessness will have on the quality of our lives or where these effects will lead.

C. Technological developments

1. **Artificial Intelligence**--a field of study involving techniques under which computers can formulate responses on the basis of content of accumulated and experience-related information.

   a. Used in expert systems.

   b. Used in decision support systems.

   c. Used in robotics.

2. **Robotics**--the science that deals with robots, their construction, capabilities, and applications.
    a. Useful for repetitive work on an assembly line.
    b. Used as mail carriers in large firms.
    c. Used in warehousing.
    d. Used by the handicapped.
    e. Used by those working with radioactive materials.
3. **CD-ROM**--the current compact disks for computers, similar to read-only memory; they cannot be erased or recorded on.
    a. About the same size as a floppy disk.
    b. Store and retrieve faster than floppy disks.
    c. Can hold a gigabyte (a million megabytes) or more.
    d. Used in libraries.
    e. Used for storing archival materials.
4. **Hypergraphics**--a method of instruction that involves the participants, the teacher, and the computer through the use of a response pad and an interconnection box.
    a. Used in classrooms.
    b. Used as a training device.

D. Viral epidemics

1. **Computer virus**--a segment of machine-language code that replaces software or data with a copy of itself, without authorization.
2. **Pakistani Brain virus** (IBM and compatibles)
    a. Replaces original boot sector with itself.
    b. Moves original boot sector to another location.
    c. Adds seven sectors which contain the remainder of the virus.
    d. Flags all modified sectors as unusable to protect itself.
    e. Replicates onto all inserted bootable floppies.

3. **Scores virus** (Macintosh)
    - a. Infects any application.
    - b. Increases application size by 7000 bytes.
    - c. Seeks out new hosts at 3 1/2-minute intervals.
    - d. Creates notepad and scrapbook files in system folder.
    - e. Creates invisible Scores and Desktop files.
    - f. Looks for existence of specific file names for destruction.
4. **Israeli virus** (IBM and compatibles)
    - a. Infects any .COM or .EXE program.
    - b. Increases program's size by approximately 1800 bytes.
    - c. Infected programs are modified to become memory resident (TSRs).
    - d. Programs are infected when they are executed in the infected system.
    - e. Floppy or hard disks can become infected.
5. **nVIR virus** (Macintosh)
    - a. This virus appears in may different varieties.
    - b. Each variety has its own individual activation characteristics.
    - c. The publication of the source code for this virus is primarily responsible for the wide variations.
    - d. The similar infection techniques are:
        - (1) Places nVIR resource in system file; code resource in application.
        - (2) Once system is infected, every application executed is infected.
6. **Alameda virus** (IBM and compatibles)
    - a. Replaces original boot sector with itself.
    - b. Stores original boot sector on first free sector.

   - c. Infects through software re-boot sequence.
   - d. Does not flag original boot sector as unusable.

7. **Lehigh virus** (IBM and compatibles)
   - a. Infects COMMAND.COM file.
   - b. Changes size by approximately 20 bytes.
   - c. Changes creation date and time.
   - d. Activates after four infections.
   - e. Destroys all system data.

8. **Datacrime virus**
   - a. Breaks down the directory section.
   - b. Makes it impossible for a disk's contents to be read.

9. **Logic Bomb virus**--checks for a certain action; for example, to see if an infected program has been executed a preset number of times.

10. **Network worms**
    - a. Attacks systems that are linked via communication lines.
    - b. May be found in programs that use network connections to spread from system to system.
    - c. Behaves like a virus or it can plant a virus.

11. **Time Bomb virus**--checks for a specific date or time (such as Friday the 13th) before executing its objective.

12. **Trojan Horse**--a programmer's placement of unauthorized instructions in a computer operating system for future use in gaining access to restricted information.

13. **Trap Door**--a segment of code that allows data to be transmitted to the legitimate operator while other data are transferred to an illegal operator.

14. **Peace virus**--a type of virus that was created to spread a greeting of world peace and then erased its own instructions, disappearing without a trace.

II. Legal and ethical issues

  A. Computer crime

    1. Any illegal act for which knowledge of computer technology is used to commit the offense.

    2. A computer crime does not mean just breaking a written law; it also means breaking ethical codes.

    3. Breaking ethical codes is a crime that is very hard to prosecute because of the way the laws are written.

      a. Big corporations do not always prosecute because they want the crime "hushed up" so it will not hurt their business.

      b. Corporations do not want to risk losing their stockholders; therefore, most computer crimes are settled out of court.

    4. More computer crime exists today because the criminals are being hired as computer consultants and specialists; no precedent has been set to use as an example to deter other potential criminals.

  B. Data spying

    1. A form of illegal access to data.

    2. Most notable are the cases where unauthorized persons learn passwords or otherwise bypass security procedures in order to gain information from a competitor or for personal gain.

    3. Theses people normally "look" at the data; they do not alter or delete data.

    4. Data spying is most easily done when systems have teleprocessing capabilities to acquire or change information.

    5. A personal computer or terminal can be used to dial up a computer. Industry must go to great lengths to improve password and log-on procedures in order to prevent this kind of activity.

  C. Hackers

    1. Computer enthusiasts who are challenged by the practice of breaking computer security measures designed to prevent unauthorized access to a particular computer system.

    2. While only a few of these individuals actually engage in unauthorized or illegal activities, these few give a bad name to the whole class of gifted experimenters.

3. Rather than steal data, a hacker is more inclined to destroy or alter it.

D. Employees or former employees

1. Personnel who have access to confidential data are subject to temptations to reveal or sell information.

2. Disgruntled or fired employees have been known to sell or give away data for revenge or, when in a position to do so, remove or alter important records from the files.

3. Sometimes when an employee changes jobs, the knowledge about confidential information acquired in his/her former job may put him/her in a possibly awkward position.

E. Piracy

1. The unauthorized copying of a computer program written by someone else.

2. This crime has become "big business" in both the U.S. and Europe.

3. Software programmers are not putting the copy protection on their programs, which makes pirating easy.

F. Laws involving computer and software usage

1. The courts have ruled that computer programs are protected under the copyright laws.

2. The problem is that programs like audio and videotapes are easy to copy, making the law difficult to enforce.

3. Some publishers have gone to great lengths to insert special routines or sometimes viruses into their software to prevent illegal copying. NO method has been foolproof, and programs to break the copy protection routines are as common as the protection routines themselves.

4. Other publishers rely on the honor system, hoping that legitimate users will appreciate the trust which permits them to protect their own interests by making archival backups.

5. Currently the trend among major software companies is to offer unprotected versions of their copyrighted software programs.

   a. Many companies sell site licensing contracts to businesses and schools.

   b. Other companies just enclose a copyright page inside the software package container.

III. Privacy issues

  A. When business was transacted using handwritten or typed documents, there was a high degree of control over the destination of copies of the information. Now, since computers process the data once it is entered, the control is less certain.

  B. The originator of the data, a person who filled out an employment application, for example, has little idea where the information will end up. Confidential data is processed by many organizations.

  C. Credit bureaus

    1. The sole purpose of these organizations is to keep up-to-date records on the financial activities of individuals and businesses.

    2. Data are compiled from member or affiliate businesses who subscribe to their services.

    3. A problem for the person holding the account is that inaccurate information can be difficult to remove from these credit bureau records.

    4. Sometimes it is easier for creditors to get information than it is for the individual concerned.

  D. Data banks

    1. There was once a proposal for a huge national data bank in which all the information about every citizen, gathered by all state and local agencies, would be stored.

    2. Using a social security number, any agency could have access to everything known about the owner of the number.

    3. The idea would save huge amounts of money because it would prevent much duplication of effort and would make information so much more accessible.

    4. Fortunately, several members of Congress foresaw the plan as the serious threat to privacy that it was, and the data bank was never created. There are, however, many data bases within businesses and state and local governments that have a great deal of confidential data about persons. Improper access to these databases could be damaging.

E. Paperless offices

  1. This term implies that all paper documents have been replaced by electronic media.

  2. Office personnel may object to a "paperless office" because memos, reports, etc., would no longer be personal and confidential.

  3. Security and passwords would have to be controlled so that sensitive information could be sent on the system.

  4. Encryption

    a. A term describing data that has been translated into a secret code for security reasons.

    b. People who send E-mail messages to a specific person may use encryption.

    c. Encryption could be used to keep computer crime to a minimum.

  5. Some companies are using passwords to enter the computer systems.

IV. **Reliability of systems**--when speaking of computer reliability, most people think only of the hardware. Systems, however, are made up of hardware, software, and people. Reliability, or lack thereof, can be a factor of any of these elements.

A. Hardware

  1. Although computer breakdowns are not as frequent as the public perceives them to be, hardware breakdowns do occur.

  2. With mainframes, most organizations have a plan for backup operation of critical systems. The expense for the backup is usually justified by the importance and timeliness of the data.

  3. Minicomputers are smaller than mainframes; however, the minis may have the same capabilities as a mainframe. Most companies will have some form of backup in case of failure.

  4. When failures occur with microcomputers, the work can usually be transferred to another computer.

  5. No matter what kind of a computer is used, there should always be a backup plan so that a hardware problem does not cripple the business operation.

B. Software

1. There is a saying that states, "There is no such thing as a program without bugs, only programs for which all the bugs have not yet been discovered."

2. Reputable software companies are responsive to users who have problems, and they often provide subscription support services to users.

3. As with storage, frequent backup copying is the best defense against software failure.

C. Storage media

1. Magnetic tape and disk packs are still being used on mainframes and minicomputers.

2. Diskettes, or fixed disks, are used for microcomputer storage.

3. Making backup copies of important data should be a regular activity, with the frequency of copying depending on the difficulty of recovering lost data.

   a. When using magnetic tape or disk packs, they should be checked at regular intervals for wear and flaws.

   b. When fixed (hard) disks are used, the copies should not be on the same disk.

   c. Floppy disks should be inspected regularly for wear or flaws.

D. People

1. In large computer shops, several people are trained to do each job, and substitutes can step in when needed.

2. In an office using microcomputers, often only one person is assigned to a job, and if that person is ill or leaves, there is chaos while someone else learns the system.

3. Having formally written, precise, and detailed procedures for all jobs is the solution to this problem, but too often these procedures are not put in writing.

E. Confidentiality

1. Computer professionals at all levels come in contact with private or even secret data.

2. Just as medical personnel and lawyers must preserve the confidentiality of their patients' or clients' records, a data entry operator must not divulge data that passes across his/her desk or terminal.

3. After leaving one job for another, or even when fired, former employees should not divulge knowledge about computer information.

4. Computer information must remain the property of the employer.

F. Accuracy

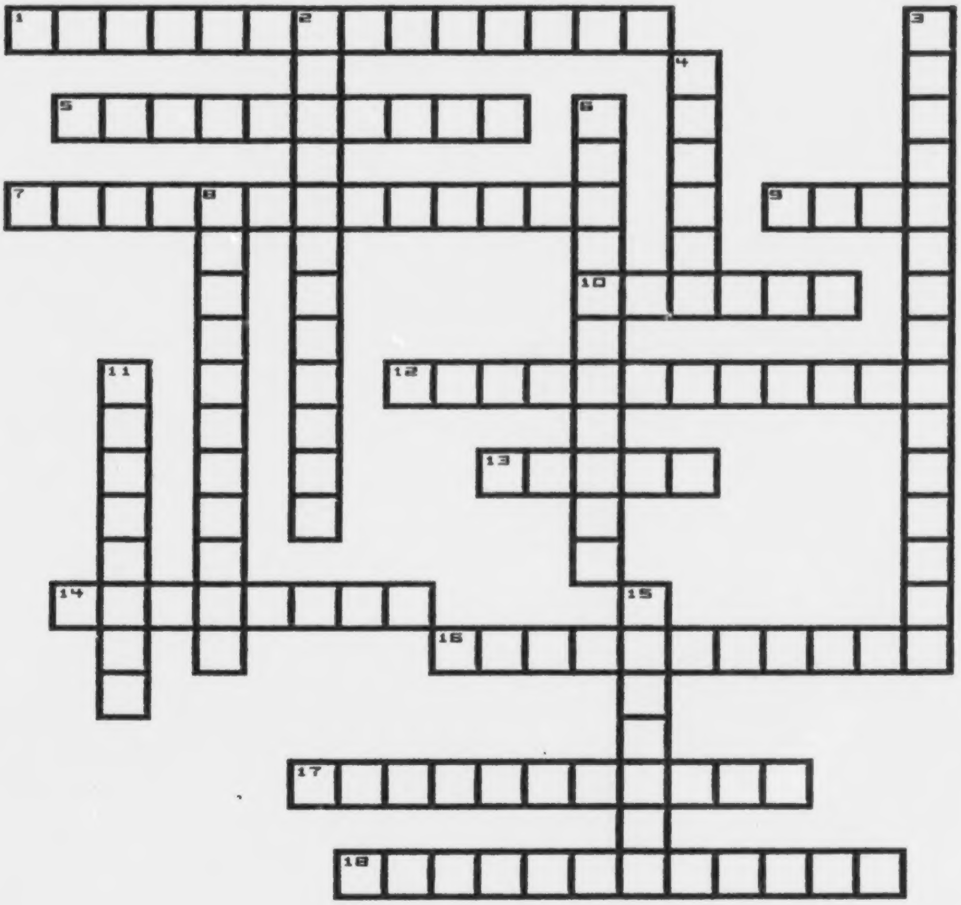
1. Loss of data can occur due to many causes--anything from industrial sabotage to hardware failure.

2. The most frequent cause of erroneous data is careless behavior by employees. Inaccurate key entry, failure to follow procedures for verification, leaving a workstation unattended, and overlooking an item of data are all ways in which an employee can be responsible for errors.

3. Improper care of equipment and disks can cause serious problems, including loss of data.

4. Not following specified exiting procedures may cause files to be inaccessible.

ACTIVITY 1: TERMINOLOGY CROSSWORD PUZZLE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ACTIVITY 1: TERMINOLOGY CROSSWORD PUZZLE CLUES

ACROSS CLUES

1. A term used to refer to the standard of moral conduct in computer use; a way in which the "spirit" of some laws are applied to computer-related activities.

5. A term describing data that has been translated into a secret code for security reasons.

7. A method used in classrooms or in-service training that involves the participants, the teacher, and the computer through the use of a response pad and an interconnection box.

9. Appears in many different varieties, each with its own individual activation characteristics. Causes loss of data and programs; causes frequent system crashes.

10. The unauthorized copying of a computer program written by someone else.

12. Programs that use network connections to spread from system to system; can behave like a virus, or it can plant a virus.

13. The current compact disks for computers, similar to read-only memory; they cannot be erased or recorded on.

14. The science that deals with robots, their construction, capabilities, and applications.

16. A programmer's placement of unauthorized instructions in a computer operating system, for future use in gaining access to restricted information.

17. Infects any application; loss of data due to system crashes.

18. The remains of a virus (if any) after activation.

DOWN CLUES

2. A program that mimics the decision-making logic of human experts.

3. A term that implies that all paper documents have been replaced by electronic media and devices.

4. A term used to describe computer enthusiasts who are challenged by the practice of breaking computer security measures designed to prevent unauthorized access to a particular computer system.

6. The program to which the virus attaches itself.

8. The process of self-isolation within the current host program and attachment of the isolated segment to a new host.

11. A virus that checks for a specific date or time (such as Friday the 13th) before executing its objective.

15. Program that watches for typical things viruses do, halts them, and them warns the computer operator.

ACTIVITY 2: ISSUES

Project 1

INSTRUCTIONS: **As our society becomes more dependent on computers and we become a "nameless society," many problems arise. Using the knowledge you have about this unit, write a one-page essay about how computer dependency and the nameless society affect you.**

ACTIVITY 2 (Continued)

Project 2

INSTRUCTIONS: **Computer crime is a growing concern within our society. Write a short paragraph explaining the issue and then your reaction concerning each of the following:**

1. Computer crime

2. Piracy

3. Prosecuting the crime

ACTIVITY 2 (Continued)

Project 3

INSTRUCTIONS: **Define and give an example of how each of the following could be used in an office setting.**

1. Robotics

2. Artificial Intelligence

3. CD-ROM

4. Hypergraphics

ACTIVITY 3: LEGAL AND ETHICAL ISSUES

Project 1

INSTRUCTIONS: **Write a short paragraph concerning the action you would take if you were in the following situations.**

Situation 1

A friend just bought the last copy of a computer game that you have wanted for a long time. You have not been able to afford the game. Your friend tells you that since there is no copy protection on the diskette, he/she will make a copy and give it to you. What would you do?

Situation 2

Your school has just purchased a spreadsheet package for the computer lab. You have a home computer and one of your classes requires a lot of work done with a spreadsheet. The copy in the lab is not copy protected. Your best friend is the lab assistant and he/she tells you that if you want a copy of the spreadsheet package, you can copy it from one of the terminals. What would you do?

Situation 3

You have a home computer and your brother/sister likes to "play" with the computer. One Saturday afternoon, he/she tells you that he/she has broken into someone's computer bank. What would you do?

ACTIVITY 3 (Continued)

Project 2

INSTRUCTIONS: **Even though both federal and state laws are enacted toward stopping computer crime, many of the laws are not enforced. Of the following, research two (2) and explain what the laws are, what the laws cover, and what your opinion would be to improve the laws.**

1. *Fair Credit Reporting Act of 1970*
2. *Freedom of Information Act of 1970*
3. *Federal Privacy Act of 1974*
4. *Counterfeit Access Device And Computer Fraud And Abuse Act of 1984*
5. *Small Business Computer And Security Education Act of 1984*
6. *Title 18 U.S. Code,* Section 1029
7. *Foreign Corrupt Practices Act of 1977*
8. *Texas Penal Code,* Section 33.01-33.05
9. Other laws suggested by the instructor

ACTIVITY 3 (Continued)

Project 3

INSTRUCTIONS: **Using the different types of viruses described in this unit, choose three (3) and explain what each one does to a computer system.**

1.

2.

3.

ACTIVITY 4: PRIVACY ISSUES

INSTRUCTIONS: **Research the following areas, and then write a report about what could be done to improve security. (Use terms discussed in the unit, such as E-mail, etc.)**

1. Credit bureaus
2. Data banks
3. Paperless offices

ACTIVITY 5: RELIABILITY OF SYSTEMS

INSTRUCTIONS: Complete the following questions.

1. Name at least five (5) different types of hardware.

   1)
   2)
   3)
   4)
   5)

2. What can be done to protect software from failure?

3. Name three (3) types of data storage.

   1)
   2)
   3)

4. Write a short paragraph about the relationship between people, confidentiality, and accuracy.

CLOSURE FOR BUSINESS COMPUTER APPLICATIONS I

This section provides a closure to the course Business Computer Applications I. The section includes review of course objectives, sections, units, and student competencies. Suggestions for course and student evaluations are also included.

SUGGESTED UNIT LESSON PLAN

CLOSURE FOR BUSINESS COMPUTER APPLICATIONS I

ALLOCATED TIME: 3 Hours

UNIT OBJECTIVE: Students will be able to analyze, evaluate, and demonstrate proficiency in course content

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Relate the objectives of the course Business Computer Applications I to personal success in the business environment.
2. Analyze section and unit contents in relation to the course objectives.
3. Recognize levels of competency performance.
4. Assess the course in terms of objectives and content.
5. Complete a course examination with a score of 70% or better accuracy.

FOCUS: An important component of the learning process is closure. Closure may be considered as a review, a summation, or a conclusion. The student is led to see how the parts make up or contribute to the whole. A final question needs to be answered: "Has the course accomplished its primary objective?"

CONTENT OUTLINE

I. Review of course objectives

II. Review of sections and units

  A. Introduction to Business Computer Applications I

  B. Word processing

  C. Electronic spreadsheets

  D. Database management

  E. Computer communication tools

  F. Social implications of computer usage

III. Analysis of student competencies

IV. Course evaluation

V. Examination

SUGGESTED TEACHER ACTIVITIES

General Teacher Preparation

1. Preview unit.
2. Review unit objectives.
3. Make instructional analysis.
4. Assess student learning needs.
5. Decide on lesson domain: cognitive, psychomotor, or affective domain.
6. Select instructional materials based on instructional analysis and student learning needs.
7. Select instructional strategies based on lesson content and student learning needs.
8. Prepare lesson plans from the unit lesson.
9. Prepare additional instructional material.
10. Reserve necessary media and equipment.

Teacher Presentation

1. Present student objectives.
2. Establish rapport with students.
3. Review lesson objectives with students.
4. Relate lesson to prior or future learning.
5. When appropriate, encourage student interaction through questioning, discussions, or some other strategy.
6. Emphasize the value/importance of the unit or activity.
7. Allow time for closure of a lesson.

Reteach Activities

1. Identify area(s) of weakness from results of evaluation.
2. Select unit activities not previously used.
3. Use additional resources and/or create materials based on student learning needs.
4. Use a different teaching strategy in reteaching.
5. Retest.

Specific Teaching Activities

1. Design a bulletin board for Business Computer Applications I. Suggestions are: WHAT I HAVE LEARNED FROM BCAI; MY BEST FROM BCAI; AFTER BCAI, WHAT?

2. Review overhead transparencies included with Section I on course objectives.

3. Discuss with students the objectives of the course.

4. Divide students into groups. Assign to each group a section to be reviewed and presented to the class. The review might include: competencies, synopsis of units, importance of units. Have the other students take notes.

5. Hand out the listing of competencies to the class. Have each student rate what he/she considers to be his/her level of performance for each competency.

   Suggested levels of performance might include: MIN (minimum), 1; F (fair), 2; A (average), 3; or M (mastery), 4. The instructor will need to determine what criteria constitute the levels. Collect these sheets and tally the information for each of the competencies. Use this information when planning for the next year. Making revisions in your teaching style, presentation, etc., for competencies that a majority of the students feels they have achieved only a minimal mastery.

6. Assign students to develop review questions for the examination. Provide the students with the procedures for keying in the questions. Make copies for each group of questions and answers for the remaining class members. Review these with the students. Inform the students that you will be adding some questions of your own. Provide the students with examples. Give the examination from these questions.

7. Give examples for the type of psychomotor skills you will be testing.

8. Assign time for students to review for their examination. Be sure they know the correct answers to the questions and/or activities.

CLOSURE FOR BUSINESS COMPUTER APPLICATIONS I

UNIT OBJECTIVE: Students will be able to analyze, evaluate, and demonstrate proficiency in course content

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Relate the objectives of the course Business Computer Applications I to personal success in the business environment.
2. Analyze section and unit contents in relation to the course objectives.
3. Recognize levels of competency performance.
4. Assess the course in terms of objectives and content.
5. Complete a course examination with a score of 70% or better accuracy.

FOCUS: An important component of the learning process is closure. Closure may be considered as a review, a summation, or a conclusion. The student is led to see how the parts make up or contribute to the whole. A final question needs to be answered: "Has the course accomplished its primary objective?"

UNIT OVERVIEW

I. Review of course objectives

II. Review of sections and units

- A. Introduction to Business Computer Applications I
    - 1. Introduction to the course
        - a. Relate the purpose of Business Computer Applications I to office education, business and industry.
        - b. Recognize the role of the youth organization relative to Business Computer Applications I.
        - c. Discuss course objectives, equipment, units, competencies, and evaluation measures.
        - d. Explain classroom organization, management, and safety.
    - 2. Computer-related concepts
        - a. Identify basic computer-related terminology.
        - b. Outline the functions of data processing.
        - c. Illustrate the parts of the information processing cycle and explain how each part is interdependent within the cycle.
        - d. Illustrate parts of the computer processor.
        - e. Compare the similarities and differences among various computer systems.
        - f. Outline the events in history pertinent to breakthroughs in data processing.
        - g. Describe and apply the capabilities of an operating system.
        - h. Explain how the use of computer-related tools can increase productivity in an organization.
- B. Word processing
    - 1. Concepts of word processing
        - a. Explain and demonstrate basic word processing terminology.

        b. Explain the purpose of computerized word processing and identify applications for its use in business, industry, government, education, and personal uses.

        c. Identify and explain the function of each equipment component within the word processing system.

        d. Identify two types of storage devices within the word processing system.

        e. Demonstrate the use of each equipment component within the word processing system.

    2. Word processing applications

        a. Outline and explain the steps in the document production cycle.

        b. Use the steps in the document production cycle to produce a document.

        c. Explain and demonstrate the formatting features of a word processing software package.

        d. Explain and demonstrate the editing features of a word processing software package.

        e. Explain and demonstrate the searching/locating features of a word processing software package.

        f. Demonstrate the use of the word processing software to produce a report, memo, and letter.

C. Electronic spreadsheets

    1. Concepts of electronic spreadsheets

        a. Use terminology common to electronic spreadsheets.

        b. Describe the structure of electronic spreadsheets and the purposes for which they are used.

        c. Identify capabilities of electronic spreadsheets.

        d. Contrast and compare electronic spreadsheet software packages.

    2. Electronic spreadsheet applications

        a. Plan a spreadsheet and design a template for it.

- b. Enter and manipulate data.
- c. Write and use a simple macro.
- d. Demonstrate some advanced mathematical functions.
- e. Print and graph the results and save the template.

D. Database management

  1. Concepts of database management

    - a. Use terminology associated with database management systems.
    - b. Explain the purpose and benefits of databases.
    - c. List typical capabilities of database management software.
    - d. Describe three types of database structures.
    - e. Discuss criteria for comparing software packages.

  2. Database management applications

    - a. Create a database.
    - b. Design and edit input and report forms.
    - c. Enter and manipulate data.
    - d. Query the database.
    - e. Use selection criteria for printing reports.

E. Computer communication tools

  1. Telecommunications

    - a. Properly use and define basic telecommunications terminology.
    - b. Describe the development of telecommunications and its uses.
    - c. Contrast and compare three types of modems.
    - d. Explain typical features of microcomputer data communication software packages.
    - e. Discuss procedures for uploading and downloading information.

  - f. Describe the kinds and types of teleconferencing, including bulletin boards.
  - g. Identify concepts of networking.

2. Concepts of computer graphics
   - a. Define and use graphics-related terminology.
   - b. Describe basic graphic concepts.
   - c. Discuss important graphic design concepts.
   - d. Discuss the differences between presentation and free-drawing graphics.
   - e. Match different types of graphs with types of information appropriate for demonstration with those graphs.
   - f. Match different types of graphic hardware with graphic applications appropriate for that hardware.
   - g. Outline and discuss several different applications for computer graphics.
   - h. Create several graphic images to represent a variety of information.
   - i. Identify tools for preparing information for mass distribution including graphics.

3. Desktop publishing
   - a. Identify desktop publishing terms.
   - b. Define the basic goal and historical development of desktop publishing.
   - c. Compare methods of traditional publishing and desktop publishing.
   - d. Describe the components of desktop publishing.
   - e. Discuss various software programs used in desktop publishing.
   - f. List eight basic areas of planning to consider when preparing a graphics document for desktop publishing.
   - g. List the guidelines for working with various graphic representations.

h. Demonstrate the tools and procedures for producing documents using available desktop publishing procedures.

4. Business application software

   a. Define utility programs.

   b. Identify the use of several utility programs.

   c. Use utility programs to enhance computer management techniques.

   d. Identify and describe various types of productivity software.

   e. Load, access, and use two productivity programs.

F. Social implications of computer usage

   1. Social implications

      a. Identify terminology related to computer crime, computer users, and new computer devices and techniques.

      b. Identify the major issues and technological developments related to computers and society.

      c. Describe the ethical and legal issues that have arisen as a result of the computer revolution.

      d. Identify privacy issues involved with electronic data storage.

      e. Explain the reasons for concern about the reliability of computer systems.

III. Analysis of student competencies

IV. Course evaluation

V. Examination

ACTIVITIES 1-2: PERSONAL SUCCESS AND THE BUSINESS ENVIRONMENT/ANALYSIS OF CONTENT IN RELATION TO OBJECTIVES

INSTRUCTIONS: **Break into groups designated by your teacher. Your group has been assigned a specific section from Business Computer Applications I. After reviewing the units within the section, make an oral report to your class, having each member of the group give a presentation.**

For each unit, report:

A. Section and unit titles.

B. Major objective(s).

C. Synopsis of unit.

D. Importance of the unit relative to one's personal success and the office environment.

ACTIVITY 3: RECOGNIZING LEVELS OF PERFORMANCE

INSTRUCTIONS: **From the list of the Business Computer Applications I course competencies, rate your personal achievement for each of the competencies.**

Circle a 4 if you feel that you have **mastered** the competency.

Circle a 3 if you feel that you have an **average mastery** of the competency.

Circle a 2 if you feel that you have a **fair mastery** of the competency.

Circle a 1 if you feel that you have only a **minimal mastery** or if you **have not had the opportunity to master the competency.**

COMPETENCY PERFORMANCE EVALUATION

(Mastery = 4 and nonmastery = 1)

COMPETENCIES

I. INTRO. TO BUSINESS COMPUTER APPLICATIONS

1. Introduction to the Course

NONE

2. Computer-Related Concepts

4 3 2 1 1. Identify basic computer-related terminology.

4 3 2 1 2. Outline the functions of data processing.

4 3 2 1 3. Illustrate the parts of the information processing cycle, and explain how each part is interdependent within the cycle.

4 3 2 1 4. Illustrate parts of the computer processor.

4 3 2 1 5. Compare the similarities and differences among various computer systems.

4 3 2 1 6. Outline the events in history pertinent to break throughs in data processing.

4 3 2 1 7. Describe and apply the capabilities of an operating system.

4 3 2 1 8. Explain how the use of computer-related tools can increase productivity in an organization.

II. WORD PROCESSING

1. Concepts of Word Pocessing

4 3 2 1 1. Explain and demonstrate basic word processing terminology.

4 3 2 1 2. Explain the purpose of computerized word processing and identify applications for its use in business, industry, government, education, and personal uses.

4 3 2 1 3. Identify and explain the function of each equipment component within the word processing system.

4 3 2 1 4. Identify two types of storage devices within the word processing system.

4 3 2 1 5. Demonstrate the use of each equipment component within the word processing system.

COMPETENCIES

2. Word Processing Applications

4 3 2 1 1. Outline and explain the steps in the document production cycle.

4 3 2 1 2 Use the steps in the document production cycle to produce a document.

4 3 2 1 3. Explain and demonstrate the formatting features of a word processing software package.

4 3 2 1 4. Explain and demonstrate the editing feature of a word processing software package.

4 3 2 1 5. Explain and demonstrate the searching/locating feature of an word processing software package.

4 3 2 1 6. Demonstrate the use of the word processing software to produce a report, memo, and letter.

III. ELECTRONIC SPREADSHEETS

1. Concepts of Electronic Spreadsheets

4 3 2 1 2. Describe the structure of electronic spreadsheets and the purposes for which they are used.

4 3 2 1 3. Identify capabilities of electronic spreadsheets.

4 3 2 1 1. Use terminology common to electronic spreadsheets.

4 3 2 1 4. Contrast and compare electronic spreadsheet software packages.

2. Electronic Spreadsheet Applications

4 3 2 1 1. Plan a spreadsheet and design a template for it.

4 3 2 1 2. Enter and manipulate data.

4 3 2 1 3. Write and use a simple macro.

4 3 2 1 4. Demonstrate some advanced mathematical functions.

4 3 2 1 5. Print and graph the results and save the template.

IV. DATABASE MANAGEMENT

1. Concepts of Database Management

4 3 2 1 1. Use terminology associated with database management systems.

4 3 2 1 2. Explain the purpose and benefits of databases.

COMPETENCIES

4 3 2 1 3. List typical capabilities of database management software.
4 3 2 1 4. Describe three types of database structures.
4 3 2 1 5. Discuss criteria for comparing software packages.

2. Database Management Applications

4 3 2 1 1. Create a database.
4 3 2 1 2. Design and edit input and report forms.
4 3 2 1 3. Enter and manipulate data.
4 3 2 1 4. Query the database.
4 3 2 1 5. Use selection criteria for printing reports.

V. COMPUTER COMMUNICATION TOOLS

1. Telecommunications

4 3 2 1 1. Properly use and define basic telecommunications terminology.
4 3 2 1 2. Describe the development of telecommunications and its uses.
4 3 2 1 3. Contrast and compare three types of modems.
4 3 2 1 4. Explain typical features of microcomputer data communication software packages.
4 3 2 1 5. Discuss procedures for uploading and downloading information.
4 3 2 1 6. Describe the kinds and types of teleconferencing, including bulletin boards.
4 3 2 1 7. Identify concepts of networking.

2. Concepts of Computer Graphics

4 3 2 1 1. Define and use graphics-related terminology.
4 3 2 1 2. Describe basic graphic concepts.
4 3 2 1 3. Discuss important graphic design concepts.
4 3 2 1 4. Discuss the differences between presentation and free-drawing graphics.
4 3 2 1 5. Match different types of graphs with types of information appropriate for demonstration with those graphs.
4 3 2 1 6. Match different types of graphic hardware with graphic applications appropriate for that hardware.
4 3 2 1 7. Outline and discuss several different applications for computer graphics.
4 3 2 1 8. Create several graphic images to represent a variety of information.

COMPETENCIES

4 3 2 1 9. Identify tools for preparing information for mass distribution including graphics.

3. Desktop Publishing

4 3 2 1 1. Identify desktop publishing terms.
4 3 2 1 2. Define the basic goal and historical development of desktop publishing.
4 3 2 1 3. Compare methods of traditional publishing and desktop publishing.
4 3 2 1 4. Describe the components of desktop publishing.
4 3 2 1 5. Discuss various software programs used in desktop publishing.
4 3 2 1 6. List eight basic areas of planning to consider when preparing a graphics document for desktop publishing.
4 3 2 1 7. List the guidelines for working with various graphic representations.
4 3 2 1 8. Demonstrate the tools and procedures for producing documents using available desktop publishing procedures.

4. Business Application Software

4 3 2 1 1. Define utility programs.
4 3 2 1 2. Identify the use of several utility programs.
4 3 2 1 3. Use utility programs to enhance computer management techniques.
4 3 2 1 4. Identify and describe various types of productivity software.
4 3 2 1 5. Load, access, and use two productivity programs.

VI. SOCIAL IMPLICATIONS OF COMPUTER USAGE

1. Social Implications

4 3 2 1 1. Identify terminology related to computer crime, computer users, and new computer devices and techniques.
4 3 2 1 2. Identify the major issues and technological developments related to computers and society.
4 3 2 1 3. Describe the ethical and legal issues that have arisen as a result of the computer revolution.
4 3 2 1 4. Identify privacy issues involved with electronic data storage.
4 3 2 1 5. Explain the reasons for concern about the reliability of computer systems.

ACTIVITY 4: ASSESSING THE OBJECTIVES AND COURSE CONTENT

INSTRUCTIONS: **Working in the same group and section and units as in Activity 1, assign each member of the group a specific portion of a section. Have each group member prepare seven review questions with answers which could be used as examination questions. As part of the seven questions, include two that relate to skill development. Key in the questions following the instructions provided by your teacher so that they can be printed out and copied for your classmates.**

APPENDIX A

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(800)227-4908

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For Non-Computer Managers and Professionals
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Sterling, NJ 07980

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Framingham, MA 01701

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New York, NY 10011

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EDUCATIONAL TECHNOLOGY
Educational Technology Publications, Inc.
720 Palisade Avenue
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730 Broadway
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Norwalk, CT 16851

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Monroe, OH 45050-2700

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Washington, DC 20814

HIGH TECHNOLOGY
Technology Publishing Company
38 Commercial Wharf
Boston, MA 02110

ICP SOFTWARE BUSINESS REVIEW
International Computer Programs, Inc.
9000 Keystone Crossing
P.O. Box 40946
Indianapolis, IN 46240

IMC JOURNAL
International Information Management Congress
P.O. Box 34404
Bethesda, MD 20817

IMPACT: INFORMATION TECHNOLOGY
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Willow Grove, PA 19090

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Seybold Publications, Inc.
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University of Oregon
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(305)465-9450

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(414)321-0880

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National Business Education Assn.
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The journal features articles for teachers of secretarial programs, typewriting, accounting, clerical programs, and basic business, as well as economics, marketing and distribution, communication, and data processing.

BUSINESS EDUCATION JOURNAL
Emporia State University
Division of Business and Business Education
1200 Commercial St.
Emporia, KS 66801
The journal contains general business topics with emphasis on business production and teacher education.

BUSINESS EDUCATION WORLD
Gregg Division
McGraw-Hill Book Company
1221 Avenue of the Americas
New York, NY 10020
Innovative application of teaching methodology, educational concepts, descriptions of new curricula and trends in business and office education subjects. Free to business teachers.

BUSINESS HORIZONS
Graduate School of Business
Indiana University
Bloomington, IN 47405
Articles by academics and business people on significant business issues, trends, and research projects.

DELTA PI EPSILON JOURNAL
Delta Pi Epsilon National Office
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JOURNAL OF BUSINESS EDUCATION
Heldref Publications
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VOCED
formerly, AMERICAN VOCATIONAL JOURNAL
2020 N. 14th Street
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The journal of the American Vocational Association published for teachers, administrators, counselors, and laypersons involved in the task of preparing people for work. The journal gives a balanced view of both the theoretical and practical aspects of vocational education.

OTHER BUSINESS PUBLICATIONS

THE BALANCE SHEET
South-Western Publishing Co.
5101 Madison Rd.
Cincinnati, OH 45227
This publication is free to teachers, and features articles of current interest relating to business and economic course offerings at the high school and postsecondary levels.

MODERN OFFICE PROCEDURES MAGAZINES
Pent/IPC
1111 Chester Avenue
Cleveland, OH 44114
Business/office market magazine featuring office procedures and utilization of new technological developments in computers, business machines, furnishings, and supplies.

THE OFFICE
Office Publications, Inc.
1200 Summer Street
Stamford, CT 06905
The magazine discusses many aspects of office practice and management for both executives and office managers. Articles include topics such as systems analysis, programming, employee relations, applications of computers, and product/equipment announcements.

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Issued twice each month, the six-page publication offers office hints and shortcuts that can be used as a training tool to upgrade office personnel.

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Bureau of Business Practices
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The magazine offers general articles and regular features on typing, vocabulary, and grammar applicable to office workers and/or secretarial science students.

THE OFFICE PROFESSIONAL
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Provides reliable information about office systems and procedures, secretarial methods, management thinking, and office technology. Also features articles on communication techniques, professional human relations skills, and the latest approaches to career development.

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Featuring office techniques, personal appearance, office etiquette, cosmetics, and hygiene for secretaries.

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Tallahassee, FL 32306
A nationwide communication link for educators involved in competency-based vocational education that encourages exchange of information on competency-based learning materials, development of new guides, packets, audiovisual materials, and computer-based resources.

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VIEWPOINTS IN BUSINESS EDUCATION
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APPENDIX B

COURSE DESCRIPTIONS AND CODES

Microcomputer Applications* 11673100
Grades 10-12, 1/2-1 unit

A cluster course which introduces basic concepts and provides hands-on skills related to microcomputer systems and applications. Special emphasis is placed on basic skills for the following: word processing, database, spreadsheet, telecommunications, desktop publishing, electronic image transfer, networking, integrated software, and social implications of using computers. This course is designed as a foundation course and provides preparation for advancement into the occupationally specific courses.

Office Support Systems 11673000
Grades 10-12, 1/2-1 unit

A cluster course which introduces the basic concepts and skills needed for general office positions. Instruction and skill development are provided in keyboarding, filing, financial activities, office machines, and securing and maintaining employment. This course provides entry-level employment skills for the office or for advancement into an occupationally specific course.

Business Financial Applications 11673200
Grades 10-12, 1/2-1 unit

A cluster course which introduces the basic concepts and skills necessary for employment in financial institutions. Special emphasis will be placed on banking operations, credit administration, types of loans, legal aspects of banking, and other financial institutions. This course provides entry-level information for working in a financial institution or for advancement into an occupationally specific course.

Business Information Processing* 11672100 (2+2)
Grades 11-12, 1-3 units (each year the course is taught)
Preemployment Laboratory or Cooperative Education

An occupationally specific course which introduces the concepts and skills for producing business documents and correspondence through the use of the document cycle and word processing equipment. Special emphasis is placed on automated management of business records, database management, and electronic spreadsheets. Management of information flow, electronic mail, desktop publishing, electronic bulletin boards, graphics, and on-line information services are also included. The course provides preparation for employment or advanced standing at the postsecondary level.

Office Administrative Systems 11672000 (2+2)
Grades 11-12, 1-3 units
Preemployment Laboratory or Cooperative Education

An occupationally specific course which includes advanced concepts and skills necessary for a general office position through a simulated office environment. Special emphasis is placed on keyboarding, records management, communications, operation of office machines, and the electronic production of business documents. The course prepares the student for office employment or advanced standing at the postsecondary level.

Business Computer Applications I* **1167220** **(2+2)**
Grades 11-12, 1-3 units ((each year the course is taught)
Preemployment Laboratory or Cooperative Education

An occupationally specific course which introduces the advanced concepts and skills related to computer applications. Special emphasis is placed on basic computer operations, word processing, database management, spreadsheet manipulation, telecommunciations, desktop publishing, and other high-level business application software. This course is designed to provide the foundation for more advanced computer applications designated in Business Computer Applications II or advanced standing at the postsecondary level.

Business Computer Applications II* **11672300**
Grades 11-12, 1-3 units
Preemployment Laboratory or Cooperative Education

An occupationally specific course which includes advanced concepts and skills related to advanced computer applications. Special emphasis is placed on teleprocessing, integrated software systems, computer-generated graphics, algorithmic approaches to problem solving, and introductory programming skills. This course provides preparation for employment in a business computer occupation or advanced standing at the postsecondary level.

Business Computer Programming I* **11672400** **(2+2)**
Grades 11-12, 1-3 units
Preemployment Laboratory or Cooperative Education

An occupationally specific course which emphasizes concepts and skills related to business computer programming. Special emphasis is placed on programming concepts and languages, programming concepts and languages, programming methodology, skills related to data storage, and an awareness of programming applications for business. This course is designed to lay a foundation for further occupationally specific business programming instruction or advanced standing at the postsecondary level.

Business Computer Programming II* **11672500**
Grades 11-12, 1-3 units
Preemployment Laboratory or Cooperative Education

An occupationally specific course which includes advanced concepts and skills related to business computer programming. Special emphasis is placed on bringing development efforts to full production status in environments, and on languages commonly used in development of commercial software for business applications. Concepts such as design, maintenance, testing, team development, and user documentation are included. This course prepares students for employment in a computer-related occupation or advanced placement at the postsecondary level.

Business Office Services, CVAE--12670500, VEH--13670500**
Grades 9-12, 1-3 units, CVAE
Grades 7-12, 1-3 units, VEH

A course which introduces basic concepts and skills needed for a general office position with concentration on the use of reprographic equipment, keyboarding, filing, and office machines. Special emphasis is placed on remediation in the areas of basic math and English usage, as well as securing and maintaining employment.

Business Office Clerical, CVAE--12670600, VEH--13670400**
Grades 9-12, 1-3 units, CVAE
Grades 7-12, 1-3 units, VEH

A course which introduces basic concepts and skills for a general office position with concentration on the use of keyboarding, filing, office machines, communications, and reprographics. Special emphasis is placed on remediation in the areas of basic math and English usage, as well as securing and maintaining employment.

* Recommended for approval to satisfy the computer science requirement for the advanced high school program.

** Students may enroll each year the course is offered

APPENDIX C

COMMON ESSENTIAL ELEMENTS
for all
OFFICE EDUCATION PROGRAMS

75.87 Office Education

(a) **The elements in this subsection are common to office education programs and shall be included in each course at the appropriate level. They are described here to preclude repetition in each course. Every school offering office education shall provide courses which include the following essential elements:**

(1) Leadership concepts and skills. The student shall be provided opportunities to:

(A) demonstrate skills, characteristics, and responsibilities of leaders and effective group members;

(B) demonstrate a knowledge of parliamentary procedure principles;

(C) plan and conduct leadership activities; and

(D) prepare for effective citizenship and for participation in our democratic society.

(2) Concepts and skills related to successful employment and/or postsecondary training. The student shall be provided opportunities to:

(A) identify employment opportunities and preparation requirements in the chosen field;

(B) identify effective methods to secure and terminate employment;

(C) demonstrate effective communication skills both oral and written, and follow through on assigned tasks;

(D) demonstrate dependability and punctuality;

(E) demonstrate productive work habits and attitudes;

(F) understand the importance of taking pride in the quality of work performed;

(G) recognize the dignity in work;

(H) develop skills in planning and organizing work;

(I) apply required methods and sequences when performing tasks;

(J) apply principles of time management and work simplification when performing assigned tasks;

  - (K) identify ethical practices and responsibilities; and
  - (L) understand the importance of the application of organizational policies and procedures.

(3) Concepts and skills associated with entrepreneurship. The student shall be provided opportunities to:

  - (A) identify opportunities for business ownership;
  - (B) understand the risk and profit motive factor;
  - (C) understand the elements and advantages of the free enterprise system; and
  - (D) explain the role of small business in the free enterprise system.

(4) Concepts and skills related to safety and safe working conditions. The student shall be provided opportunities to identify and apply safe working practices to all training situations.

(5) Concepts and skills associated with human relations and personality development. The student shall be provided opportunities to:

  - (A) understand the importance of maintaining good health and proper appearance for effective job performance;
  - (B) understand oneself and others;
  - (C) exercise self-control;
  - (D) accept and use criticism;
  - (E) recognize basic human relationships as they relate to business success; and
  - (F) demonstrate characteristics for successful working relationships.

(6) Concepts and skills related to personal and business management. The student shall be provided opportunities to:

  - (A) explain how management assists in reaching personal and family goals;
  - (B) explain the management process;
  - (C) describe the role of management in controlling stress;
  - (D) identify and understand personal checking accounts;
  - (E) identify and understand personal loan application processes;
  - (F) identify and understand different financial institutions;

(G) identify the role and functions of business management;

(H) understand the lines of authority; and

(I) identify effective supervisory techniques.

OFFICE EDUCATION ESSENTIAL ELEMENTS

OFFICE ADMINISTRATIVE SYSTEMS

(Blended Course)

75.87

(b) Office Administrative Systems (1, 2, or 3 units) shall include the following essential elements:

(1) Concepts and skills related to office administration. The student shall be provided opportunities to:

  (A) identify duties and responsibilities common to most offices;

  (B) delineate the workflow of an office or system;

  (C) relate office operations to the entire business organization;

  (D) establish priorities and develop organizational abilities;

  (E) interpret and apply information from resource materials; and

  (F) identify and apply concepts and skills related to safety and safe working conditions in the office environment.

(2) Concepts and skills related to successful employment and/or postsecondary training. The student shall be provided opportunities to:

  (A) identify employment opportunities and preparation requirements in the chosen field; and

  (B) identify effective methods to secure, maintain, and terminate employment.

(3) Concepts and skills necessary for effective communications in the office environment. The student shall be provided opportunities to:

  (A) identify proper techniques in business telephone usage;

  (B) prepare effective communication using the document production cycle;

  (C) identify and use proper oral and written language skills relating to business;

  (D) identify current terminology relating to business and technology; and

  (E) identify classes of mail, special mailing services, and procedures of handling incoming and outgoing mail.

(4) Concepts and skills related to information management and control. The student shall be provided opportunities to:

(A) identify equipment and supplies necessary for a filing system;

(B) identify correct usage in applying terminology and procedures for indexing, coding, and filing using the alphabetic, numeric, subject, and geographic system;

(C) identify, describe, and/or demonstrate procedures for controlling manual records and computerized information; and

(D) identify a transfer and retention schedule.

(5) Concepts and skills necessary for the operation of office equipment. The student shall be provided opportunities to:

(A) use the touch system to produce accurate mailable business documents using electronic equipment;

(B) demonstrate the ability to enter and retrieve data using a computer;

(C) use the touch system on the electronic calculator/computer to compute business problems;

(D) identify appropriate reprographic processes for specific tasks; and

(E) demonstrate ability to produce legible copies.

(6) Concepts and skills associated with the social implications of computers. The student shall be provided opportunities to:

(A) examine issues concerning responsible use of computer systems; and

(B) understand the social ramifications of computer applications related to privacy, values, and reliability of systems.

OFFICE EDUCATION ESSENTIAL ELEMENTS

OFFICE ADMINISTRATIVE SYSTEMS II

(State Board Approval Pending Fall 1990)

75.87

Office Administrative Systems II (1, 2, or 3 units) shall include the following essential elements:

(1) Advanced concepts and skill simulation related to office administration. The student shall be provided opportunities to:

- *(A) perform duties and responsibilities common to most offices;*
- *(B) establish the workflow of an office or system;*
- *(C) relate office operations to the entire business organization;*
- *(D) establish priorities and develop organizational abilities; and*
- *(E) interpret data, make decisions, and apply information from resource materials.*

(2) Advanced concepts and skills necessary for effective communications in the office environment. The student shall be provided opportunities to:

- *(A) apply proper techniques in business telephone usage;*
- *(B) identify the use of teleprocessing systems for data exchange in an actual business setting;*
- *(C) compose and produce effective communication using the document production cycle;*
- *(D) use proper oral and written language skills relating to business; and*
- *(E) identify current terminology relating to business and technology.*

(3) Advanced concepts and skills related to information management and control. The student shall be provided opportunities to:

- *(A) demonstrate procedures for organizing and filing materials;*
- *(B) identify correct usage in applying terminology and procedures for indexing, coding, and filing using the alphabetic, numeric, subject, and geographic system; and*

(C) *demonstrate procedures for accessing and maintaining computerized information.*

(4) *Advanced concepts and skills simulation for the operation of office equipment. The student shall be provided opportunities to:*

(A) *demonstrate keyboarding speed and accuracy necessary for entry-level employment;*

(B) *produce mailable business documents using microcomputers;*

(C) *demonstrate the ability to enter and retrieve data using a computer;*

(D) *use the touch system on the electronic calculator/computer to compute business problems; and*

(E) *utilize appropriate reprographic processes for specific tasks, including desktop publishing.*

OFFICE EDUCATION ESSENTIAL ELEMENTS

BUSINESS INFORMATION PROCESSING

75.87

(c) **Business Information Processing (1, 2, or 3 units) shall include the following essential elements:**

(1) Concepts and skills related to effective communication and production of business documents. The student shall be provided opportunities to:

(A) demonstrate proficiency in business English, spelling, and proofreading;

(B) identify and apply correct format for business correspondence and documents;

(C) demonstrate basic information processing concepts and processes to employ the appropriate steps in document production;

(D) demonstrate proficiency in transcription;

(E) identify and use computer-based tools for document production;

(F) demonstrate basic knowledge and usage of business machines; and

(G) identify proper techniques in business telephone usage.

(2) Concepts and skills related to business records management. The student shall be provided opportunities to:

(A) identify procedures for controlling manual records by applying terminology and procedures for indexing, coding, and filing alphabetically;

(B) identify and apply procedures for automated management of business records, at least including use of database management software for storage, retrieval, manipulation, selection, and reporting of records;

(C) identify business applications of electronic spreadsheets and understand and/or demonstrate fundamental concepts and operational procedures related to their use.

(3) Concepts and skills related to management of information flow out of, into, and within an office. The student shall be provided opportunities to:

(A) understand concepts related to computer-aided preparation and distribution of personalized correspondence, at least including use of mail merge and electronic mail.

(B) identify tools for preparing information for mass distribution, at least including desktop publishing, production of presentation graphics, and maintenance of electronic bulletin boards;

(C) understand the concepts of using communication systems both for accessing remotely stored information (at least including use of on-line information services) and for transmission of outgoing information; and

(D) understand concepts related to transporting of images electronically.

(4) Identify characteristics of contemporary office systems related to information processing and management. The student shall be given opportunities to:

(A) observe office activity related to information processing and information management;

(B) discuss responsibilities and procedures involved in business information processing with individuals working in the field;

(C) read and discuss current literature related to business information processing; and

(D) identify emerging information processing tools and understand their impact on business information processing.

OFFICE EDUCATION ESSENTIAL ELEMENTS

BUSINESS INFORMATION PROCESSING II

(State Board Approval Pending Fall 1990)

75.87

Business Information Processing II (1, 2, or 3 units) shall include the following elements:

(1) Concepts and skills related to effective communication and production of business documents. The students shall be provided opportunities to:

- *(A) demonstrate proficiency in business English, spelling, proofreading in production of original business documents, and/or editing work previously created;*
- *(B) produce documents through the use of text manipulation and/or high-level integrated software; and*
- *(C) compose, dictate, and transcribe business documents.*

(2) Concepts and skills related to business information management. The students shall be provided opportunities to apply decision making skills:

- *(A) using advanced procedures and applications for automated management of business information using a database management system.*
- *(B) using advanced applications of electronic spreadsheets.*

(3) Concepts and skills related to management of information flow out of, into, and within an office. The students shall be provided opportunities to:

- *(A) integrate word processing, database, and spreadsheet software using import/export commands and/or ASCII files;*
- *(B) understand the process for setup installation and use of software by reading documentation prepared by the software manufacturer;*
- *(C) identify and apply concepts of layout and design in desktop publishing, including graphics, fonts, and paper for final copy;*
- *(D) demonstrate proficiency in the use of presentation graphics to aid in presentation of an oral report;*
- *(E) identify criteria for selection and evaluation of software; and*
- *(F) apply concepts related to transmitting information electronically.*

OFFICE EDUCATION ESSENTIAL ELEMENTS

BUSINESS OFFICE SERVICES

75.87

(d) **Coordinated Vocational Academic Education (CVAE) Business Office Services (1-2 units) shall include the following essential elements:**

(1) Concepts and skills involved in keyboarding. The student shall be provided opportunities to:

(A) demonstrate the skills involved in keyboarding;

(B) apply appropriate procedures for proofreading and correcting errors; and

(C) demonstrate and identify information processing concepts in keyboarding.

(2) Concepts and skills necessary for filing. The student shall be provided opportunities to:

(A) demonstrate procedures used in alphabetic and numeric filing; and

(B) identify procedures used in electronic filing.

(3) Concepts and skills related to the operation of office equipment. The student shall be provided opportunities to:

(A) identify the procedures and equipment used in completing layouts for reprographics;

(B) identify the procedures used in operating reprographic equipment;

(C) demonstrate the ability to prepare masters and to operate the offset press;

(D) demonstrate the ability to use desktop publishing features;

(E) demonstrate the ability to solve mathematical problems using the touch method on the electronic calculator/computer keypad; and

(F) demonstrate the ability to enter and retrieve data on a microcomputer.

(4) Concepts and skills necessary for processing mail. The student shall be provided opportunities to:

(A) identify the procedures involved in processing incoming and outgoing mail; and

(B) identify the procedures involved in transmitting mail electronically.

(5) Concepts and skills necessary for effective communications. The student shall be provided opportunities to:

  (A) develop effective listening skills;

  (B) identify and use proper business techniques when using the telephone;

  (C) prepare effective written communications; and

  (D) identify and use proper language usage skills in business.

(6) Concepts and skills necessary for securing and maintaining employment. The student shall be provided opportunities to:

  (A) demonstrate the skills necessary for job application and interview; and

  (B) apply human relations skills and the ability to work with others.

(7) Concepts and skills associated with the social implications of computers. The student shall be provided opportunities to:

  (A) examine issues concerning responsible use of computer systems;

  (B) understand the social ramifications of computer applications related to privacy, values, and reliability of systems.

OFFICE EDUCATION ESSENTIAL ELEMENTS

BUSINESS COMPUTER APPLICATIONS I

(Blended Course)

75.87

(e) **Business Computer Applications I (1, 2, or 3 units) shall include the following essential elements:**

(1) Concepts and skills related to computer operations. The student shall be provided opportunities to:

(A) demonstrate comprehension of computer-related vocabulary;

(B) describe the functions of the components of a computer system;

(C) demonstrate and apply the capabilities of an operating system; and

(D) explore the concepts of telecommunication techniques and networking.

(2) Concepts and skills related to word processing. The student shall be provided opportunities to:

(A) demonstrate word processing concepts;

(B) apply higher-level capabilities of word processing tools and software; and

(C) understand the procedures and recognize the importance of merging data processing and word processing.

(3) Concepts and skills related to spreadsheets. The student shall be provided opportunities to:

(A) demonstrate higher-level spreadsheet concepts; and

(B) apply higher-level capabilities of spreadsheets.

(4) concepts and skills related to database management. The student shall be provided opportunities to:

(A) demonstrate database concepts, procedures, and capabilities; and

(B) apply higher-level capabilities of database management.

(5) Concepts and skills related to advanced application software. The student shall be provided opportunities to:

  (A) discuss integration of people and computers for productivity;

  (B) demonstrate the ability to apply information processing concepts and skills to realistic business situations;

  (C) demonstrate the ability to apply information processing concepts and skills to realistic personal situations; and

  (D) identify tools for preparing information for mass distribution including desktop publishing, graphics, and maintenance of electronic bulletin boards.

(6) Concepts and skills associated with the social implications of computers. The student shall be provided opportunities to

  (A) examine issues concerning responsible use of computer systems; and

  (B) understand the social ramifications of computer applications related to privacy, values, and reliability of systems.

OFFICE EDUCATION ESSENTIAL ELEMENTS

BUSINESS COMPUTER APPLICATIONS II

75.87

(f) **Business Computer Applications II (1, 2, or 3 units) shall include the following essential elements:**

(1) Concepts and skills related to teleprocessing. The student shall be provided opportunities to:

(A) describe the basic components of a teleprocessing system;

(B) demonstrate an understanding of network organization; and

(C) understand and identify the use of a teleprocessing system for data exchange in an actual business setting.

(2) Concepts and skills related to integrated systems. The student shall be provided opportunities to:

(A) understand and identify the advantages, capabilities, and functions of integrated software systems;

(B) manipulate data through the use of an integrated system; and

(C) use integrated systems to merge data from different applications.

(3) Concepts and skills related to graphics. The student shall be provided opportunities to:

(A) analyze and interpret business graphs and charts; and

(B) demonstrate graphic representation of data.

(4) Concepts and skills related to algorithmic approaches to problem solving. The student shall be provided opportunities to:

(A) demonstrate the ability to solve problems using appropriate analytical techniques; and

(B) demonstrate an awareness of the phases related to systems analysis and design.

(5) Concepts and skills related to applying logic to programming. The student shall be provided opportunities to:

  (A) apply the appropriate analytical techniques in solving programming problems;

  (B) translate the applied solution into a common programming or macro language; and

  (C) demonstrate the ability to debug and audit a solution.

OFFICE EDUCATION ESSENTIAL ELEMENTS

BUSINESS COMPUTER PROGRAMMING I

(Blended Course)

75.87

(g) **Business Computer Programming I (1, 2, or 3 units) shall include the following essential elements:**

(1) Concepts and skills related to computer data processing. The student shall be provided opportunities to:

(A) demonstrate comprehension of computer-related terminology; and

(B) identify the major components of computer systems.

(2) Concepts and skills related to hardware utilization. The student shall be provided opportunities to:

(A) review computer hardware operations;

(B) understand categorization of hardware according to size, application, and configurations;

(C) reinforce the ability to use basic operating systems; and

(D) review the proper care of hardware and software.

(3) Concepts and skills associated with algorithmic approaches to problem solving. The student shall be provided opportunities to:

(A) demonstrate the skills related to structured approaches to problem solving; and

(B) translate problems into logical steps using appropriate program design techniques.

(4) Concepts and skills associated with commands and statements of a programming language. The student shall be provided opportunities to:

(A) identify and use variables, constants, and literals;

(B) demonstrate the use of input and output statements;

(C) demonstrate and use conditional and unconditional branching statements;

(D) demonstrate and use of looping techniques; and

(E) develop and use subroutines for modular programming.

(5) Concepts and skills related to program execution, testing, debugging, and documentation. The student shall be provided opportunities to:

(A) demonstrate the ability to execute computer programs with sample data;

(B) distinguish between syntax and logic errors;

(C) apply standard debugging procedures; and

(D) develop internal and external program documentation including record layout and report spacing charts.

(6) Concepts and skills associated with data storage. The student shall be provided opportunities to:

(A) demonstrate an understanding of the types of media for data storage;

(B) identify methods of storing data on storage devices; and

(C) create and maintain a program to store and retrieve data from a file.

(7) Concepts and skills associated with the social implications of computers. The student shall be provided opportunities to:

(A) examine issues concerning responsible use of computer systems; and

(B) understand the social ramifications of computer applications related to privacy, values, and reliability of systems.

OFFICE EDUCATION ESSENTIAL ELEMENTS

BUSINESS COMPUTER PROGRAMMING II

75.87

(h) Business Computer Programming II (1, 2, or 3 units) shall include the following essential elements:

(1) Concepts and skills related to application system development. The student shall be provided opportunities to:

- (A) demonstrate a comprehension of the system development;
- (B) demonstrate a comprehension of the implementation process; and
- (D) develop user documentation.

(2) Concepts and skills related to structured programming application. The student shall be provided opportunities to:

- (A) develop an understanding of structured programming;
- (B) identify the concepts of random and sequential files;
- (C) translate solutions into major structural elements of a program;
- (D) translate solutions into language statements for input, processing, and output; and
- (E) develop ability to use an advanced operating system computer.

(3) Concepts and skills related to program testing. The student shall be provided opportunities to:

- (A) develop test data and testing techniques;
- (B) apply test data to programs run on the computer; and
- (C) demonstrate the ability to debug and audit programs.

(4) Concepts and skills associated with software implementation and maintenance. The student shall be provided opportunities to:

- (A) write documentation for maintaining a system;
- (B) understand the process of implementing a system into production status; and
- (C) develop an understanding of the programmer responsibilities in program maintenance.

OFFICE EDUCATION ESSENTIAL ELEMENTS

OFFICE SUPPORT SYSTEMS

75.87

(i) **Office Support Systems (1/2 or 1 unit) shall include the following essential elements:**

(1) Concepts and skills involved in keyboarding. The student shall be provided opportunities to:

(A) demonstrate the skill of keyboarding letters, memos, forms, and reports;

(B) apply appropriate procedures for proofreading and correcting errors; and

(C) demonstrate and identify information processing concepts in keyboarding.

(2) Concepts and skills necessary for filing. The student shall be provided opportunities to:

(A) demonstrate procedures used in alphabetic, numeric, subject, and geographic filing; and

(B) identify procedures used in electronic filing.

(3) Concepts and skills necessary for financial activities. The student shall be provided opportunities to:

(A) demonstrate the ability to maintain a checking account; and

(B) demonstrate the procedures involved in preparing a payroll and preparing tax reports.

(4) Concepts and skills necessary for processing mail. The student shall be provided opportunities to:

(A) identify the procedures involved in processing incoming and outgoing mail; and

(B) identify the procedures involved in transmitting mail electronically.

(5) Concepts and skills necessary for effective communications. The student shall be provided opportunities to:

(A) identify and use proper business techniques when using the telephone;

(B) prepare effective written communications; and

(C) identify and use proper language usage skills in business.

(6) Concepts and skills necessary for effective understanding of business operations. The student shall be provided opportunities to:

  (A) describe the role of business in the enterprise system; and

  (B) identify the general responsibilities of employees.

(7) Concepts and skills necessary for securing and maintaining employment. The student shall be provided opportunities to:

  (A) demonstrate the skills necessary for job application and interview; and

  (B) apply human relations skills and the ability to work with others.

OFFICE EDUCATION ESSENTIAL ELEMENTS
MICROCOMPUTER APPLICATIONS

75.87

(j) **Microcomputer Applications (1/2 or 1 unit) shall include the following essential elements:**

(1) Fundamental concepts and operational skills related to microcomputer systems. The student shall be provided opportunities to:

(A) understand the background and uses for computer systems;

(B) demonstrate competency in touch keyboarding, including technique, speed, and accuracy;

(C) understand the components of computer systems, including hardware, operating environments, and application software; and

(D) demonstrate competency in microcomputer systems operation.

(2) Concepts and skills necessary for microcomputer-based document production, formatting, and proofreading, at least including use of word processing software and automated spellchecking software. The student shall be provided opportunities to:

(A) identify and use the terminology related to word processing;

(B) demonstrate the operational procedures used in document production and page layout; and

(C) employ appropriate steps in producing documents.

(3) Concepts and skills necessary for use of microcomputer-based storage, retrieval, manipulation, and reporting information, at least including use of database management software. The student shall be provided opportunities to:

(A) identify and use the terminology related to information management;

(B) demonstrate the operational procedures and techniques used in information management software;

(C) use microcomputer software to design databases, enter and manipulate information, and produce reports (including graphic display of summary reports); and

(D) conduct keyword database searches using logic operations such as AND, OR, and NOT.

(4) Concepts and skills necessary for use of microcomputer-based computation, analysis, planning, and reporting with numeric data, at least including use of electronic spreadsheets. The student shall be provided opportunities to:

(A) identify and use the terminology related to electronic manipulation of numeric data;

(B) demonstrate operational procedures and techniques used with microcomputer software for processing numeric data;

(C) use microcomputer software for computation, analysis, planning, and reporting (including graphic display) with numeric data; and

(D) apply electronic spreadsheet software both through use of prepared templates and with student-designed problem solutions.

(5) Concepts and skills related to emerging microcomputer-based information processing tools. The student shall be provided opportunities to:

(A) understand the concept of exchanging information via telecommunication software, at least including electronic mail, remote bulletin board access, and access of on-line information services;

(B) understand and use features of integrated software packages to share data among applications;

(C) understand concepts and identify characteristics and uses associated with tools for desktop publishing and generation of presentation graphics;

(D) understand concepts related to transporting of textual and nontextual data both locally and remotely, at least including transporting of text and facsimile images electronically, and physical transfer of ultra-high-density storage media; and

(E) understand concepts related to networked and multi-user configurations.

(6) Concepts associated with the social implications of computers. The student shall be provided opportunities to:

(A) examine issues concerning responsible use of computer systems;

(B) understand the social ramifications of computer applications related to privacy, values, and reliability of systems; and

(C) understand the impact of computing on leisure and household management.

OFFICE EDUCATION ESSENTIAL ELEMENTS

BUSINESS FINANCIAL APPLICATIONS

75.87

(k) **Business Financial Applications (1/2 or 1 unit) shall include the following essential elements:**

(1) Concepts and skills related to banking operations. The student shall be provided opportunities to:

(A) identify and understand checking accounts;

(B) understand fundamentals of teller operations; and

(C) identify and understand bookkeeping systems.

(2) Concepts and skills related to credit administration. The student shall be provided opportunities to:

(A) understand methods of credit investigation; and

(B) understand concepts related to the use of credit analysis.

(3) Concepts and skills related to loans. The student shall be provided opportunities to:

(A) identify types of loans and purposes; and

(B) demonstrate and understand calculation of interest and payoff.

(4) Concepts and skills related to legal aspects of banking. The student shall be provided opportunities to:

(A) understand customer and consumer services; and

(B) understand regulations of financial intermediaries.

(5) Concepts and skills related to other financial institutions. The student shall be provided opportunities to:

(A) understand and explore savings and loan operations; and

(B) understand and explore credit union operations.

OFFICE EDUCATION ESSENTIAL ELEMENTS

MEDICAL ADMINISTRATIVE SYSTEMS

(Specialty Course--State Board Approval Pending Fall 1990)

75.87

(l.1) ***Medical Administrative Systems (1, 2, or 3 units) shall include the following essential elements:***

(1) *Concepts and skills related to effective communication and production of medical documents. The students shall be provided opportunities to:*

(A) *identify current terminology relating to the medical industry and to technology;*

(B) *demonstrate proficiency in business English, spelling, and proofreading;*

(C) *demonstrate keyboarding speed and accuracy necessary for entry-level employment;*

(D) *identify and apply correct format for medical correspondence and documents;*

(E) *apply word processing skills using computer-based tools by employing appropriate steps for document production;*

(F) *compose and prepare effective medical communications using the document production cycle;*

(G) *demonstrate proficiency in transcription;*

(H) *apply proper techniques in business telephone usage;*

(I) *use proper oral and written language skills relating to business;*

(J) *recognize classes of mail, special mailing services, and procedures of handling incoming and outgoing mail;*

(K) *understand concepts related to transporting images electronically; and*

(L) *identify reprographic copying techniques.*

(2) *Concepts and skills related to information management and control of medical documents. The student shall be provided opportunities to:*

(A) *identify procedures for controlling manual records by applying terminology and procedures for indexing, coding, and filing alphabetically; and*

(B) *identify, describe, and/or demonstrate procedures for controlling manual records and computerized information.*

(3) *Concepts and skills necessary for use of microcomputer-based medical document production, formatting, and proofreading, using word processing software and automated spellchecking, thesaurus, and grammar checking software. The student shall be provided opportunities to:*

  (A) *identify and use terminology related to word processing;*

  (B) *demonstrate the operational procedures used in medical document production and page layout; and*

  (C) *employ appropriate steps in producing medical documents.*

(4) *Concepts and skills necessary for the operation of office equipment. The student shall be provided opportunities to:*

  (A) *use the touch system on the electronic calculator/computer to compute business problems related to a medical office; and*

  (B) *identify reprographic copying techniques.*

(5) *Concepts and skills related to administering a medical office. The student shall be provided opportunities to:*

  (A) *perform duties and responsibilities common to most offices.*

(6) *Concepts and skills related to processing of medical insurance. The student shall be provided opportunities to:*

  (A) *identify, describe, and/or demonstrate procedures used in processing government claims; and*

  (B) *identify, describe, and/or demonstrate procedures used in processing private carrier claims.*

(7) *Concepts and skills related to the daily accounting cycle. The student shall be provided opportunities to:*

  (A) *demonstrate procedures used in operating a pegboard system; and*

  (B) *demonstrate procedures used in a computerized medical office accounting system.*

OFFICE EDUCATION ESSENTIAL ELEMENTS

LEGAL ADMINISTRATIVE SYSTEMS

(Specialty Course--State Board Approval Pending Fall 1990)

75.87

(l.2) ***Legal Administrative Systems (1, 2, or 3 units) shall include the following essential elements:***

- *(1)* *Concepts and skills related to effective communication and production of legal documents. The student shall be provided opportunities to:*
  - *(A)* *identify current terminology relating to the legal business and to technology;*
  - *(B)* *demonstrate proficiency in business English, spelling, and proofreading;*
  - *(C)* *demonstrate keyboarding speed and accuracy necessary for entry-level employment;*
  - *(D)* *identify and apply correct format for legal correspondence and documents;*
  - *(E)* *apply word processing skills using computer-based tools by employing appropriate steps for document production;*
  - *(F)* *compose and prepare effective legal communications using the document production cycle;*
  - *(G)* *demonstrate proficiency in transcription;*
  - *(H)* *apply proper techniques in business telephone etiquette;*
  - *(I)* *use proper oral and written language skills relating to business;*
  - *(J)* *recognize classes of mail, special mailing services, and procedures of handling incoming and outgoing mail; and*
  - *(K)* *understand concepts related to transporting images electronically.*
- *(2)* *Concepts and skills related to information management and control of legal documents. The student shall be provided opportunities to:*
  - *(A)* *identify procedures for controlling manual records by applying terminology and procedures for indexing, coding, and filing alphabetically; and*
  - *(B)* *identify, describe, and/or demonstrate procedures for controlling manual records and computerized information.*

(3) Concepts and skills necessary for use of microcomputer-based legal document production, formatting, and proofreading, using word processing software and automated spellchecking, thesaurus, and grammar-checking software. The student shall be provided opportunities to:

(A) identify and use terminology related to word processing;

(B) demonstrate the operations procedures used in legal document production and page layout; and

(C) employ appropriate steps in producing legal documents.

OFFICE EDUCATION ESSENTIAL ELEMENTS

INSURANCE ADMINISTRATIVE SYSTEMS

(Specialty Course--State Board Approval Pending Fall 1990)

75.87

(1.3) ***Insurance Administrative Systems (1, 2, or 3 units) shall include the following essential elements:***

(1) Concepts and skills related to general insurance. The student shall be provided opportunities to:

(A) understand and explain the origins of insurance;

(B) identify the different types of losses that property owners are faced with and which are covered by insurance policies;

(C) explain the different risks that are involved which warrant obtaining insurance;

(D) differentiate between pure risks and speculative risks that may be encountered by the insured;

(E) identify requirements of an insurable risk and the items which may prevent obtaining insurance;

(F) explain society's costs/benefits with insurance and the reasons in favor of purchasing insurance;

(G) interpret insurance regulations as they pertain to policyholders;

(H) identify the procedures required for obtaining financial solvency;

(I) explain the activities of agents and the importance of agents to an agency;

(J) analyze the methods used by agencies in pricing insurance policies;

(K) assemble and prepare for submission insurance contracts;

(L) explain how insurance can be justified as being a product;

(M) identify and explain the different parts contained in an insurance policy;

(N) compare and contrast the duties applicable to an agent as those of a broker;

(O) diagram and explain the path of an insurance policy from the point of contact with the prospect to settlement of a claim; and

(P) simulate the myriad of activities performed by the members of an insurance agency.

(2) Concepts and skills related to automobile insurance. The student shall be provided opportunities to:

- *(A) understand and apply insurance terminology correctly in written and oral communication;*
- *(B) explain the role of insurance concepts to society;*
- *(C) differentiate the sections contained in a personal automobile policy;*
- *(D) identify the information contained in an insuring agreement;*
- *(E) prepare quotations for coverages by use of the rating manual and computer;*
- *(F) explain the different coverages available and the advantages and disadvantages of each;*
- *(G) illustrate the effect of variables in preparing quotes, i.e., limits, classifications, territories, and symbols; and*
- *(H) prepare appropriate documents for insurance transactions.*

(3) Concepts and skills related to homeowners insurance. The student shall be provided opportunities to:

- *(A) explain the concept regarding eligibility for insurance coverage;*
- *(B) identify the information contained in the insuring agreement;*
- *(C) identify and understand personal checking accounts;*
- *(D) identify and understand personal loan application processes;*
- *(E) identify and understand different financial institutions;*
- *(F) identify the role and functions of business management;*
- *(G) understand the lines of authority; and*
- *(H) identify effective supervisory techniques.*

OFFICE EDUCATION ESSENTIAL ELEMENTS

BANKING AND FINANCIAL SYSTEMS

(Specialty Course--State Board Approval Pending Fall 1990)

75.87

(l.4) ***Banking and Financial Systems (1, 2, or 3 units) shall include the following essential elements (specialty course):***

(1) *Concepts and skills related to effective communication and production of documents used in banking. The students shall be provided opportunities to:*

- *(A)* *identify current terminology relating to banking industry and to technology;*
- *(B)* *demonstrate proficiency in business English, spelling, and proofreading;*
- *(C)* *demonstrate keyboarding speed and accuracy necessary for entry-level employment;*
- *(D)* *identify and apply correct format for correspondence and documents used in banking and financial institutions;*
- *(E)* *apply word processing skills using computer-based tools by employing appropriate steps for document production;*
- *(F)* *compose and prepare effective communications using the document production cycle;*
- *(G)* *use proper oral and written language skills relating to business;*
- *(H)* *apply proper techniques in business telephone; and*
- *(I)* *understand concepts related to transporting images electronically.*

(2) *Concepts and skills related to information management and control of banking and other financial documents. The student shall be provided opportunities to:*

- *(A)* *identify procedures for controlling manual records and applying terminology and procedures for indexing, coding, and filing alphabetically; and*
- *(B)* *identify, describe, and/or demonstrate procedures for controlling manual records and computerized information.*

(3) *Concepts and skills necessary for the operation of office equipment. The student shall be provided opportunities to:*

- *(A)* *use the touch system on the electronic calculator/computer to compute business problems related to banking and financial institutions; and*

(B) *identify reprographic copying techniques.*

(4) *Concepts and skills related to administration duties in the banking industry. The student shall be provided opportunities to:*

(A) *perform duties and responsibilities common to most banking institutions.*

(5) *Concepts and skills related to banking operations. The student shall be provided opportunities to:*

(A) *trace the history of banking and money;*

(B) *identify and understand checking accounts;*

(C) *understand fundamentals of teller operations; and*

(D) *identify and understand bookkeeping systems.*

(6) *Concepts and skills related to credit administration. The student shall be provided opportunities to:*

(A) *understand methods of credit investigation; and*

(B) *understand concepts related to the use of credit analysis.*

(7) *Concepts and skills related to loans. The student shall be provided opportunities to:*

(A) *identify types of loans and purposes; and*

(B) *demonstrate and understand calculation of interest and payoff.*

(8) *Concepts and skills related to legal aspects of banking. The student shall be provided opportunities to:*

(A) *understand customer and consumer services; and*

(B) *understand regulations of financial intermediaries.*

(9) *Concepts and skills related to other financial institutions. The student shall be provided opportunities to:*

(A) *understand and explore savings and loan operations; and*

(B) *understand and explore credit union operations.*

OFFICE EDUCATION ESSENTIAL ELEMENTS

BUSINESS OFFICE CLERICAL

75.87

(m) Coordinated Vocational Academic Education (CVAE) Business Office Clerical (1-2 units) shall include the following essential elements:

(1) Concepts and skills involved in keyboarding. The student shall be provided opportunities to:

(A) demonstrate the skills involved in keyboarding;

(B) apply appropriate procedures for proofreading and correcting errors; and

(C) demonstrate and identify information processing concepts in keyboarding.

(2) Concepts and skills necessary for filing. The student shall be provided opportunities to:

(A) demonstrate procedures used in alphabetic and numeric filing; and

(B) identify procedures used in electronic filing.

(3) Concepts and skills related to the operation of office equipment. The student shall be provided opportunities to:

(A) identify the procedures and equipment used in completing layouts for reprographics;

(B) identify the procedures used in operating reprographic equipment;

(C) demonstrate the ability to use desktop publishing features;

(D) demonstrate the ability to solve mathematical problems using the touch method on the electronic calculator/computer keypad; and

(E) demonstrate the ability to enter and retrieve data on a microcomputer.

(4) Concepts and skills necessary for processing mail. The student shall be provided opportunities to:

(A) identify the procedures involved in processing incoming and outgoing mail; and

(B) identify the procedures involved in transmitting mail electronically.

(5) Concepts and skills necessary for effective communications. The student shall be provided opportunities to:

- (A) develop effective listening skills;
- (B) identify and use proper business techniques when using the telephone;
- (C) prepare effective written communications; and
- (D) identify and use proper language usage skills in business.

(6) Concepts and skills necessary for securing and maintaining employment. The student shall be provided opportunities to:

- (A) demonstrate the skills necessary for job application and interview; and
- (B) apply human relations skills and the ability to work with others.

(7) Concepts and skills associated with the social implications of computers. The student shall be provided opportunities to:

- (A) examine issues concerning responsible use of computer systems;
- (B) understand the social ramifications of computer applications related to privacy, values, and reliability of systems.

APPENDIX D

SUGGESTED MINIMUM LIST OF EQUIPMENT, FURNITURE, AND SUPPLIES

(for a Quality Office Education program)

Equipment and furniture:

A computer or a terminal for each student

- Macintosh/IBM compatible 286 minimum
- 640 K minimum storage
- two disk drives preferably one 5 1/4 and one 3 1/2 inch
- hard disk 30 meg.
- enhanced 101 keyboard with keypad
- high resolution graphics capability
- several expansion slots

A fully equipped teacher's computer station

Monitors

- Color
- High resolution at least EGA
- Swivel/tilt monitor bases

Printers (A combination of the following printers may be needed --using 1 printer to each 2 computers as a rule of thumb)

- A 24 pin dot matrix printer with near letter quality/high speed modes
- Letter quality printers
- Laser printer (preferably postscript)

Other computer peripherals and equipment

- Scanner (If you will be doing a lot of graphics work)
- Automatic switch boxes for switching access to each computer/terminal attached
- Mouse for each computer or terminal
- At least two modems and access to dedicated phone line
- Extra cables for attaching various peripherals

Copy machine

New overhead projector with low heat/good cooling system

LCD computer panel for data projection

Pull-down movie screen

File cabinets and storage cupboards

Adjustable student work stations at appropriate height

Adjustable chairs, preferably rolling

Supplies

Covers and keyboard covers

Sufficient number of diskettes for backups of each software programs for each computer

Computer paper, both laser and regular cut

Ribbons--standard black and colors

Locking diskette cases

Colored diskettes--each class uses a different color

Computer maintenance kit--including screw drivers of various sizes, Q-tips, alcohol, screen wipes, mini vacuum, air vacuum

APPENDIX E

STEPS IN LESSON PLAN DEVELOPMENT

Because of the nature of the business computer applications I courses, individual lesson plans for each day have not been provided. The sequence of units and production skills in this course are taught in a variety of ways because of the need for each program to meet the needs of its local population. The curriculum outlines at the beginning of each unit provide all of the necessary instructional information for the unit and are designed for your use in preparing lesson plans.

This guide was developed with flexibility, allowing the instructor to teach basic skills in a variety of methods. Although the guide is scoped and sequenced, many units can be incorporated into rotation schedules and can be performed independently by students. A sample lesson format is included.

Group Instructions

Several units of business computer applications I may be taught by group instruction. These units are called battery units. Battery units are units, taught through group instruction, that all students will need regardless of their career objectives. Some of the battery units that could be taught through the battery system are:

Computer-related Concepts
Concepts of Word Processing
Concepts of Electronic Spreadsheets
Concepts of Database Management
Telecommunications
Computer Graphics
Desktop Publishing
Business Application Software
Social Implications

Independent Instructions

In independent instruction, the instructor needs to schedule students on all equipment or work stations related to the student's interest or career objective. Students' work needs to be individualized at these stations. Some students will be able to complete the project within two or three days, while others may not complete the work within a week. Avoid giving the faster student busy work. Try to provide training that will assist students in becoming more knowledgeable and more productive. Practice sets and software packages are ideal for independent instruction. Units that lend themselves to independent instruction include the following:

Word Processing Applications
Electronic Spreadsheet Applications
Database Management Applications
Computer Graphics
Desktop Publishing
Business Application Software

Integrated Software and Simulations

The automated office is rapidly moving toward the systems concept. In this approach many information processing tools are used in an integrated manner. It is important for students to learn to function in this atmosphere. This can be done by the office simulation strategy, using integrated software packages.

Units that lend themselves to simulations through the use of integrated software include the following:

Electronic Spreadsheet Applications
Database Management Applications
Computer Graphics
Desktop Publishing
Business Application Software

Evaluation

The State Board of Education Rules for Curriculum states that students should be evaluated on a 0-100 scale with 70 and above receiving course credit. At the beginning of the year, you should establish the grading system for your class. Consideration should be given to how individualized instruction, battery instruction, attendance, etc., will affect the students' grades for the grading period.

In evaluating students on independent instruction, it is impossible to evaluate each job assigned. Therefore, on some assignments, answer sheets may be given to the students so they may check their answers with the teacher's key. On some assignments, the teacher might grade for specifics. For example, grade one paper for proofreading, one for typographical errors, one for format, etc. Since students may not be completing the same assignments, students may be given a grade sheet and assignment sheet for each rotation.

SAMPLE LESSON FORMAT

COURSE________________________INSTRUCTOR____________________

Unit Title ____

LESSON TITLE ____

Estimated Time__________________(Hours or Days)

Essential Element(s)____

Domain(s) ____Cognitive ___Psychomotor ___Affective

Basic Skill(s) ____Reading ___Writing
___Mathematics

Student Competency(ies)____

____

____

____

____

Teacher Preparation **Resources**

____

____

____

____

____

____

____

____

Teacher Presentation **Teaching Strategies**

Student Activities **Resources**

Assignment(s)

Closure

Evaluation

PLANNING THE LESSONS

Divisions of the Lesson Plan

The best kind of teaching is based on good planning, good presentation, and a well-disciplined class. Good planning is based on a series of steps. Although individual lesson plans vary, the most common is the developmental plan.

1. **Unit Title**-Unit title identifies the broad area of which the specific lesson is a part.

2. **Lesson Title**--The lesson title identifies a category of the unit for which instruction is delivered.

3. **Estimated Time**--The time frame assists the instructor in determining the scope of each lesson so that the students are able to perform the competencies.

4. **Essential Elements**--Essential element or elements might be included within a lesson or a complete lesson. Identifying essential elements, if any, will assist the instructor in planning for instruction of the essential elements.

5. **Domains**--Lesson consists of three kinds: (1) cognitive domain (knowledge or information), (2) psychomotor domain (skills), and (3) affective domain (values or attitudes). Determining the kind of lesson assists the instructor in selecting the necessary teaching materials, strategies, and tools needed for a particular lesson.

6. **Basic Skills**--In preparing each lesson, the instructor needs to identify the basic skills which are a part of the lesson.

7. **Student Competencies**--Since the curriculum is performance-based instruction, students are expected to acquire specific competencies. These competencies need to be identified for each lesson.

8. **Teacher Preparation**--It is here that the instructor decides on the resources: supplies, materials, equipment, and other instructional items which will be needed for the lesson. The preparation might include charts, tables, books, field trips or other kinds of information. Here also, the preparation needed by students should be considered. Perhaps there has been a reading assignment or a notebook requested. Whatever the student needs for the lesson should be determined at this point.

9. **Teacher Presentation**--This is the part of the lesson in which the thing to be learned is presented. Presentation should proceed, step by step, simple to complex, with teaching points interspersed in the proper sequence. The instructor should think out the procedure or explanation beforehand and then develop it. Part of this process is selecting appropriate teaching strategies. Examples are: demonstration, questioning, discussion, drill, and lecture. Strategies should be selected based (1) on the kind of lesson being taught and (2) on the learning needs of the students for whom the instruction is intended.

10. **Student Activities**--Practicing the thing to be learned is the keynote of successful teaching and learning in the field of vocational/technical education. The activities assigned to the students are the part of the lesson that makes use of this principle by providing an opportunity for the students to do something about the thing learned.

11. **Closure**--Comes at the end of the lesson and ties everything together. Closure could be called a summary; however, with closure the instructor guides the students into seeing how the parts contribute to make the whole.

12. **Assignment**--The assignment part of the lesson may be considered a continuation of the student activities. Assignments provide a meaningful further application of the thing just learned. It is an aide to retention. One of the laws of learning is repetition. The assignment may also consist of preparation for the next lesson.

13. **Evaluation**--Both the teacher and the student need some method of feedback for establishing if learning has taken place. This system is broadly referred to as "evaluation."

    Student evaluation is usually thought of as:

    1) "paper and pencil" tests, and
    2) norm-referenced testing--comparing students on a scale of 0-100.

Student evaluation in vocational-technical subjects should include a variety of methods. Some suggestions are:

Norm-Referenced Testing. Norm-referenced testing is a form of educational measurement that ascertains an individual's performance in relation to the performance of other individuals on the same measuring device. Because the individual is compared with some normative group, such measures are described as norm-referenced. Examples: standardized objective tests, and teacher-prepared essay and objective tests.

Criterion-Referenced Testing. Criterion-referenced testing is a form of educational measurement that ascertains an individual's status with respect to some criterion or performance standard. Because the individual is compared with some established criterion, rather than with other individuals, these measures are described as "criterion-referenced." Examples:

1. Attached is a simple program. By the next class day, enter and run the program. The program must be debugged. A score of 100% is required.

2. Attached is a list of programming terminology. Define the terms. A score of 75% or higher is required. Maximum time is forty minutes.

Since the curriculum guide is performance-based instruction with specified student competencies, criterion-referenced testing is considered an excellent method for measuring student performance.

There are three essential steps to remember in implementing criterion-referenced measurement. They are:

1. Prior to instruction, prepare a set of instructional objectives for the unit.

2. Select appropriate assessment approaches/techniques to assess students' mastery of the stated objectives. The appropriateness of the technique selected will largely be determined by the nature of the skill or competency specified in the objective.

3. Match particular assessment techniques selected with the performance behaviors delineated in the instructional objectives. It is important that the specific test item corresponds to the level and type of behavior specified in the objective. In other words, test on the same level that you teach. The levels of the three domains are broken out in this Appendix.

Other methods of evaluation are: Teacher observation of skill and/or attitude, teacher-assigned projects, production measures, and accuracy measures.

MAJOR CATEGORIES IN THE COGNITIVE DOMAIN

Evaluation

involves acts of decision making, judging, or selecting based on criteria and rationale
requires synthesis in order to evaluate

Synthesis

combines elements to form new entity from original one
requires analysis in order to synthesize

Analysis

separates whole into its parts, until relationship among elements is clear
requires ability to apply information in order to analyze

Application

uses information in a situation different from original learning context
requires comprehension of information in order to apply in new situation

Comprehension

interprets, translates, summarizes, or paraphrases given information
requires knowledge in order to demonstrate comprehension

Knowledge

recognition and recall of facts and specifics

VERBS FOR STATING BEHAVIORAL OBJECTIVES

COGNITIVE DOMAIN

1. Knowledge--remembering previously learned materials

Cite
Define
Identify
Label
List
Match
Name
Quote
Recite
Reproduce
Pronounce
State

2. Comprehension--ability to grasp the meaning of material

Alter
Change
Convert
Depict
Describe
Explain
Give examples
Illustrate
Interpret
Paraphrase
Portray
Rephrase
Represent
Restate
Reword
Simplify
Substitute
Summarize
Translate
Vary

3. Application--ability to use learned material in new and concrete situations

Apply
Compute
Demonstrate
Direct
Discover
Employ
Evidence
Manifest
Manage
Predict
Prepare
Present
Relate
Show
Solve
Utilize

4. Analysis--ability to break down material into its component parts so that its organizational structure can be understood

Ascertain
Analyze
Associate
Designate
Determine
Diagnose
Diagram
Differentiate
Discriminate
Dissect
Distinguish
Divide
Examine
Find
Infer
Outline
Point out
Reduce
Separate

5. Synthesis--ability to put parts together to form a new whole

Combine
Compile
Compose
Conceive
Create
Design
Develop
Devise
Expand
Extend
Generalize
Integrate
Invent
Modify
Originate
Plan
Pose
Propose
Project
Rearrange
Revise
Rewrite
Synthesize
Theorize
Write

6. Evaluation ability--to judge the value of material for a given purpose

Appraise
Assess
Compare
Conclude
Contrast
Criticize
Critique
Deduce
Evaluate
Judge
Weigh

MAJOR CATEGORIES IN THE PSYCHOMOTOR DOMAIN

Naturalization

completes one or more skills with ease and becomes automatic with limited physical or mental exertion

Articulation

combines more than one skill in sequence with harmony and consistency

Precision

reproduces a skill with accuracy, proportion, and exactness; usually performed independent of original source

Manipulation

performs skill according to instruction rather than observation

Imitation

observes skill and attempts to repeat it

VERBS FOR STATING BEHAVIORAL OBJECTIVES

PSYCHOMOTOR DOMAIN

1. Perception--becoming aware of the action to be performed through sensory stimulation
   - Detect
   - Examine
   - Feel
   - Handle
   - Hear
   - Hold
   - Note
   - Notice
   - Observe
   - Perceive
   - Recognize
   - See
   - Sense
   - Smell
   - Taste
   - Touch

2. Set--becoming ready to act mentally, physically, and emotionally
   - Adjust
   - Check
   - Confirm
   - Decide
   - Estimate
   - Familiarize
   - Locate
   - Place
   - Position
   - Ready
   - Regulate
   - Select
   - Set
   - Set up
   - Sit
   - Situate
   - Stand
   - Station

3. Guided response--performing the action under supervision through imitation or trial and error
   - Attempt
   - Carry out
   - Copy
   - Duplicate
   - Experiment
   - Follow
   - Imitate
   - Mimic
   - Practice
   - Repeat
   - Reproduce
   - Test
   - Try

4. Mechanism--performing the act habitually with some degree of confidence
   - Acquire
   - Assemble
   - Complete
   - Conduct
   - Construct
   - Do
   - Execute
   - Gain
   - Improve
   - Maintain
   - Make
   - Manipulate
   - Measure
   - Operate
   - Pace
   - Perform
   - Proceed
   - Produce
   - Progress
   - Use

5. Complex overt response--performing the act automatically with high level of skill
   - Achieve
   - Accomplish
   - Advance
   - Attain
   - Automatize
   - Exceed
   - Excel
   - Master
   - Perfect
   - Reach
   - Refine
   - Succeed
   - Surpass
   - Transcend

MAJOR CATEGORIES IN THE AFFECTIVE DOMAIN

Characterizing

total behavior is consistent with values internalized

Organizing

committed to set of values as displayed by behavior

Valuing

displays behavior consistent with single belief or attitude in situations where he/she is not forced to comply or obey

Responding

complies with given expectations by attending or reacting to stimuli or phenomena; i.e., interests

Receiving

aware of; passively attending to certain phenomena and stimuli; i.e., listening

VERBS FOR STATING BEHAVIORAL OBJECTIVES

AFFECTIVE DOMAIN

1. Receiving--attending and becoming aware of a situation, idea, or process through the sensory organs

   Acknowledge
   Attend
   Be aware
   Listen
   Look
   Pay attention
   Receive
   Show alertness
   Tolerate
   View
   Watch

2. Responding--doing something about a situation, idea, or process

   Agree (to)
   Answer
   Ask
   Assist
   Be willing
   Communicate
   Comply
   Consent
   Contribute
   Cooperate
   Discuss
   Follow up
   Indicate
   Inquire
   Obey
   Participate
   Pursue
   Question
   React
   Read
   Reply
   Request
   Respond
   Seek
   Visit
   Volunteer

3. Valuing--developing attitudes by choosing, prizing, cherishing

   Accept
   Adopt
   Approve
   Choose
   Commit
   Desire
   Display
   Endorse
   Exhibit
   Express
   Form
   Initiate
   Prefer
   Sanction

4. Organization--arranging values in priority according to a system

   Adapt
   Arrange
   Categorize
   Classify
   Establish
   Formulate
   Group
   Order
   Organize
   Rank
   Rate
   Systemize

5. Characterization--choosing the same values consistently to form a philosophy of life

   Act
   Advocate
   Be consistent
   Behave
   Characterize
   Conform
   Continue
   Defend
   Devote
   Disclose
   Encourage
   Endure
   Exemplify
   Function
   Habituate
   Incorporate
   Influence
   Justify
   Maintain
   Pattern
   Persist
   Preserve
   Recommend
   Remain
   Retain
   Reveal
   Serve
   Support
   Uphold
   Urge
   Verify

APPENDIX F

COURSE COMPETENCY CHECKLIST

(M = 4 and Min = 1)

COMPETENCIES

I. INTRO. TO BUSINESS COMPUTER APPLICATIONS

1. Introduction to the Course

NONE

2. Computer-Related Concepts

4 3 2 1 1. Identify basic computer-related terminology.

4 3 2 1 2. Outline the functions of data processing.

4 3 2 1 3. Illustrate the parts of the information processing cycle and explain how each part is interdependent within the cycle.

4 3 2 1 4. Illustrate parts of the computer processor.

4 3 2 1 5. Compare the similarities and differences among various computer systems.

4 3 2 1 6. Outline the events in history pertinent to breakthroughs in data processing.

4 3 2 1 7. Describe and apply the capabilities of an operating system.

4 3 2 1 8. Explain how the use of computer-related tools can increase productivity in an organization.

II. WORD PROCESSING

1. Concepts of Word Pocessing

4 3 2 1 1. Explain and demonstrate basic word processing terminology.

4 3 2 1 2. Explain the purpose of computerized word processing and identify applications for its use in business, industry, government, education, and personal uses.

4 3 2 1 3. Identify and explain the function of each equipment component within the word processing system.

4 3 2 1 4. Identify two types of storage devices within the word processing system.

4 3 2 1 5. Demonstrate the use of each equipment component within the word processing system.

COMPETENCIES

2. Word Processing Applications

4 3 2 1 1. Outline and explain the steps in the document production cycle.

4 3 2 1 2. Use the steps in the document production cycle to produce a document.

4 3 2 1 3. Explain and demonstrate the formatting features of a word processing software package.

4 3 2 1 4. Explain and demonstrate the editing features of a word processing software package.

4 3 2 1 5. Explain and demonstrate the searching/locating features of a word processing software package.

4 3 2 1 6. Demonstrate the use of the word processing software to produce a report, memo, and letter.

III. ELECTRONIC SPREADSHEETS

1. Concepts of Electronic Spreadsheets

4 3 2 1 1. Use terminology common to electronic spreadsheets.

4 3 2 1 2. Describe the structure of electronic spreadsheets and the purposes for which they are used.

4 3 2 1 3. Identify capabilities of electronic spreadsheets.

4 3 2 1 4. Contrast and compare electronic spreadsheet software packages.

2. Electronic Spreadsheet Applications

4 3 2 1 1. Plan a spreadsheet and design a template for it.

4 3 2 1 2. Enter and manipulate data.

4 3 2 1 3. Write and use a simple macro.

4 3 2 1 4. Demonstrate some advanced mathematical functions.

4 3 2 1 5. Print and graph the results and save the template.

IV. DATABASE MANAGEMENT

1. Concepts of Database Management

4 3 2 1 1. Use terminology associated with database management systems.

4 3 2 1 2. Explain the purpose and benefits of databases.

4 3 2 1 3. List typical capabilities of database management software.

COMPETENCIES

4 3 2 1 4. Describe three types of database structures.
4 3 2 1 5. Discuss criteria for comparing software packages.

2. Database Management Applications

4 3 2 1 1. Create a database.
4 3 2 1 2. Design and edit input and report forms.
4 3 2 1 3. Enter and manipulate data.
4 3 2 1 4. Query the database.
4 3 2 1 5. Use selection criteria for printing reports.

V. COMPUTER COMMUNICATION TOOLS

1. Telecommunications

4 3 2 1 1. Properly use and define basic telecommunications terminology.
4 3 2 1 2. Describe the development of telecommunications and its uses.
4 3 2 1 3. Contrast and compare three types of modems.
4 3 2 1 4. Explain typical features of microcomputer data communication software packages.
4 3 2 1 5. Discuss procedures for uploading and downloading information.
4 3 2 1 6. Describe the kinds and types of teleconferencing, including bulletin boards.
4 3 2 1 7. Identify concepts of networking.

2. Computer Graphics

4 3 2 1 1. Define and use graphics-related terminology.
4 3 2 1 2. Describe basic graphic concepts.
4 3 2 1 3. Discuss important graphic design concepts.
4 3 2 1 4. Discuss the differences between presentation and free-drawing graphics.
4 3 2 1 5. Match different types of graphs with types of information appropriate for demonstration with those graphs.
4 3 2 1 6. Match different types of graphic hardware with graphic applications appropriate for that hardware.
4 3 2 1 7. Outline and discuss several different applications for computer graphics.
4 3 2 1 8. Create several graphic images to represent a variety of information.

COMPETENCIES

4 3 2 1 9. Identify tools for preparing information for mass distribution including graphics.

3. Desktop Publishing

4 3 2 1 1. Identify desktop publishing terms.
4 3 2 1 2. Define the basic goal and historical development of desktop publishing.
4 3 2 1 3. Compare methods of traditional publishing and desktop publishing.
4 3 2 1 4. Describe the components of desktop publishing.
4 3 2 1 5. Discuss various software programs used in desktop publishing.
4 3 2 1 6. List eight basic areas of planning to consider when preparing a graphics document for desktop publishing.
4 3 2 1 7. List the guidelines for working with various graphic representations.
4 3 2 1 8. Demonstrate the tools and procedures for producing documents using available desktop publishing procedures.

4. Business Application Software

4 3 2 1 1. Define utility programs.
4 3 2 1 2. Identify the use of several utility programs.
4 3 2 1 3. Use utility programs to enhance computer management techniques.
4 3 2 1 4. Identify and describe various types of productivity software.
4 3 2 1 5. Load, access, and use two productivity programs.

VI. SOCIAL IMPLICATIONS OF COMPUTER USAGE

1. Social Implications

4 3 2 1 1. Identify terminology related to computer crime, computer users, and new computer devices and techniques.
4 3 2 1 2. Identify the major issues and technological developments related to computers and society.
4 3 2 1 3. Describe the ethical and legal issues that have arisen as a result of the computer revolution.
4 3 2 1 4. Identify privacy issues involved with electronic data storage.
4 3 2 1 5. Explain the reasons for concern about the reliability of computer systems.

APPENDIX G

ADAPTING INSTRUCTIONAL METHODS AND MATERIALS FOR SPECIAL NEEDS STUDENTS

The mere nature of instruction which makes office education courses unique can also be offered as a viable course for students with special needs. Because a variety of learning styles are addressed in office education curriculum and instructional delivery, modification normally will not be necessary, unless the student has an identified handicapping condition. Nevertheless, the instructor of office education courses should always seek advice and assistance from special education teachers, counselors, and school administrators if he/she suspects any student is having difficulty mastering the objectives of the course. The following are suggestions for adapting instructional methods and materials for special needs students. These suggestions are arranged alphabetically according to the specific handicapping condition in order to assist the instructor in determining the most appropriate methods for meeting the special needs of these students:

Emotionally Disturbed

1. Seek the assistance of the school counselor and/or school psychologist in determining methods to cope with deviant student behavior.
2. Be warm and empathetic--trust is important in establishing any relationship, especially with these students.
3. Teach problem-solving skills.
4. Utilize operant conditioning--keeping a record of the behavior modification process is recommended in order to test the stability of a student's behavior.

Hearing Impaired

1. Always write directions on the board, or write them on assignment sheets.
2. If a student is skilled in lip reading, face him/her when speaking.
3. If audio methods are used to supplement instruction, construct a written synopsis of the important points covered in the audio presentation.
4. Seat the student in the front of the room.
5. Assign a hearing student to provide peer tutoring for the hearing-impaired student.
6. You should realize that a mild to moderate hearing loss will hinder a student's ability to understand language concepts and structure. Emphasis on remediation in language development should occur in the resource room; however, you should be aware of this problem in developing grading procedures.

Learning Disabled

1. You cannot plan instructional strategies until a student's learning disability has been diagnosed and his/her type of learning disability has been determined.
2. Gear instructional methods to the sense or learning style by which the student learns best.
3. Divide lessons into their component subskills--this allows the student to master elements of the task and enables him/her to synthesize the elements or components into the complex level required of the total task.

Mentally Retarded

1. Use unit approaches as an instructional strategy. If vocabulary and sentence structure are simplified, and if concrete illustrations and exercises are provided, research confirms that mildly mentally retarded students can master relatively complex material.
2. Learning should be programmed in sequence and presented in such a way that the student will learn at a rate compatible with his/her development.
3. Proceed in a systematic way--let more basic knowledge precede more difficult material.
4. Let the student experience success--organize materials and use methods that lead him/her to the right answer.
5. Provide feedback--let the student know when he/she responds correctly.
6. Provide for positive transfer of knowledge from one situation to another--help the student discover general fundamental principles.
7. Provide repetition of learned experiences--mentally retarded students seem to require more repetitions of an experience in order to retain the information.
8. Don't confuse the student--associate a given stimulus or cue with only one response in the early stages of learning.
9. Limit the number of concepts presented in any one class period.

Visually Impaired

1. Use materials which are concrete--the student must be presented with concrete objects that he/she can touch and manipulate.
2. Unify experiences--actual concrete experience can be unified by using sequencing and explaining the sequencing.

3. Learn by doing--it is necessary to initiate self-motivation and activity for students because objects do not attract blind children. Their ability to listen, relate, and remember must be developed to the fullest.
4. Use lamps and rheostat with variable intensities--by varying light intensities and positioning, lamps can provide the additional or dimmed illumination that a visually-impaired student may require.
5. Make use of large-type books--often provided by the Commission for the Blind.
6. Provide raised line paper (writing paper, graph paper, etc.)--raised line paper allows a student to write script "on the line" or to maneuver a graph either by placing markers onto the graph paper or by punching holes.
7. Provide cassette tape records--students can use the recorder to take notes, listen to recorded texts, or to complete assignments.
8. Use talking calculators--these hand-held calculators speak each entry and result (earphones are available).
9. Allocate more time--students will frequently need extra time to complete assignments and examinations. Allowing time and a half is usually considered acceptable.

APPENDIX H

2 + 2 + 2 ARTICULATION

As a result of the changes in office information systems technology, the electronic office requires a work force with many diverse skills and attributes. The traditional job categories and job titles of office workers have been replaced with an encyclopedia of positions supporting office information systems functions and activities.

To train the office personnel required to support these positions, the two-year secondary office education training program or the two-year community college office careers degree program may not provide the extensive training that business and industry require. Most office information systems management positions require four-year college degrees.

In the past, office education programs offered through the high schools and the community colleges have presented duplicated training plans. Students who chose to enroll in community college office careers programs after high school often had to repeat many of the same competencies that they mastered in their high school vocational programs. If the students transferred to a four-year university program, many of the courses would not transfer. In most instances, the university program was a duplication of the high school and the community college training programs.

In order to prepare the office information systems work force of the future, high schools, community colleges, and universities must develop coordinated training programs that help students in making a smooth transition from one educational level to another without experiencing delays, duplication of effort, or loss of credit.

A 2 + 2 + 2 articulation program in the area of office information systems will be developed in this six-year project. The program will provide a complete six-year training program that begins in grade eleven and joins the two-year Dallas County Community College degree program with the junior and senior years of the four-year University of North Texas Office Technology program. Several other junior and senior colleges and universities in Texas have shown interest in participating in this articulation project. The 2 + 2 + 2 articulation program will be developed according to the following process:

Phase 1: The project administrator and the curriculum development specialist will establish a steering committee to develop a plan of action for project implementation. The steering committee will be divided into subcommittees to provide input into the development of the surveys, competency chart, secondary curriculum guides, competency profile, and the evaluation, tracking, and follow-up system.

Phase 2: Businesses and industries in the Dallas-Fort Worth area and in three additional metropolitan areas will be surveyed by the project administrator and the curriculum development specialist to determineemployment needs and to define the occupational career path for office information systems from entry-level to management. Surveys will be completed and tabulated by November 15, 1987.

Phase 3: DACUM analyses will be conducted of each major occupational category in the career path. The project administrator and the curriculum development specialist will serve as DACUM coordinators, and two trained DACUM consultants will be hired to facilitate the DACUMs. The first DACUM will be completed and validated by February 1, 1987. It is anticipated that the remaining DACUMS will be completed and validated by March 1, 1988. A competency continuum chart will then be developed by occupational category (entry-level to advanced).

Phase 4: The project administrator and the curriculum development specialist will work with representatives from the Educational Development and Training Center (formerly Occupational Curriculum Laboratory), East Texas State University, Dallas County secondary and DCCCD office education (information systems) faculty, and representatives from business and industry to develop the curriculum guides (including course outlines and instructional materials) and competency profiles using the results of validated DACUM analyses. Curriculum guides will meet the approved TEA guidelines for the State office education occupational cluster curriculum. Curriculum guides and profiles will be completed by May 15, 1988.

Phase 5: The project administrator and the curriculum development specialist will work with a subcommitte of Dallas County secondary and DCCCD office education (information systems) faculty to develop a process to evaluate and upgrade course content and curriculum materials. Evaluation system will be completed and tested by May 15, 1988.

Phase 6: The project administrator and the curriculum development specialist will conduct a curriculum workshop for secondary office education (information systems) faculty in Dallas County to review the curriculum guides, including instructional materials and competency profiles. The workshop will be scheduled prior to June 15, 1988.

Phase 7: The project administrator and the curriculum development specialist will work with a subcommittee of Dallas County secondary and DCCCD office education (information systems) faculty, occupational administrators, and placement personnel to develop a system to track students from grade eleven through the two-year community college and university programs. The Follow-Up System will be compatible with the new DCCCD CareerPlanning and Placement System. The Follow-Up System will be reviewed by the steering committee prior to June 15, 1988.

Phase 8: The project administrator will work with vocational administrators from the Dallas Independent School Districts to revise existing articulation agreements. Agreements will be revised prior to June 30, 1988.

NOTE: Phases 1 - 8 were completed according to the established schedule, and 2 + 2 + 2 articulation is presently an ongoing project.

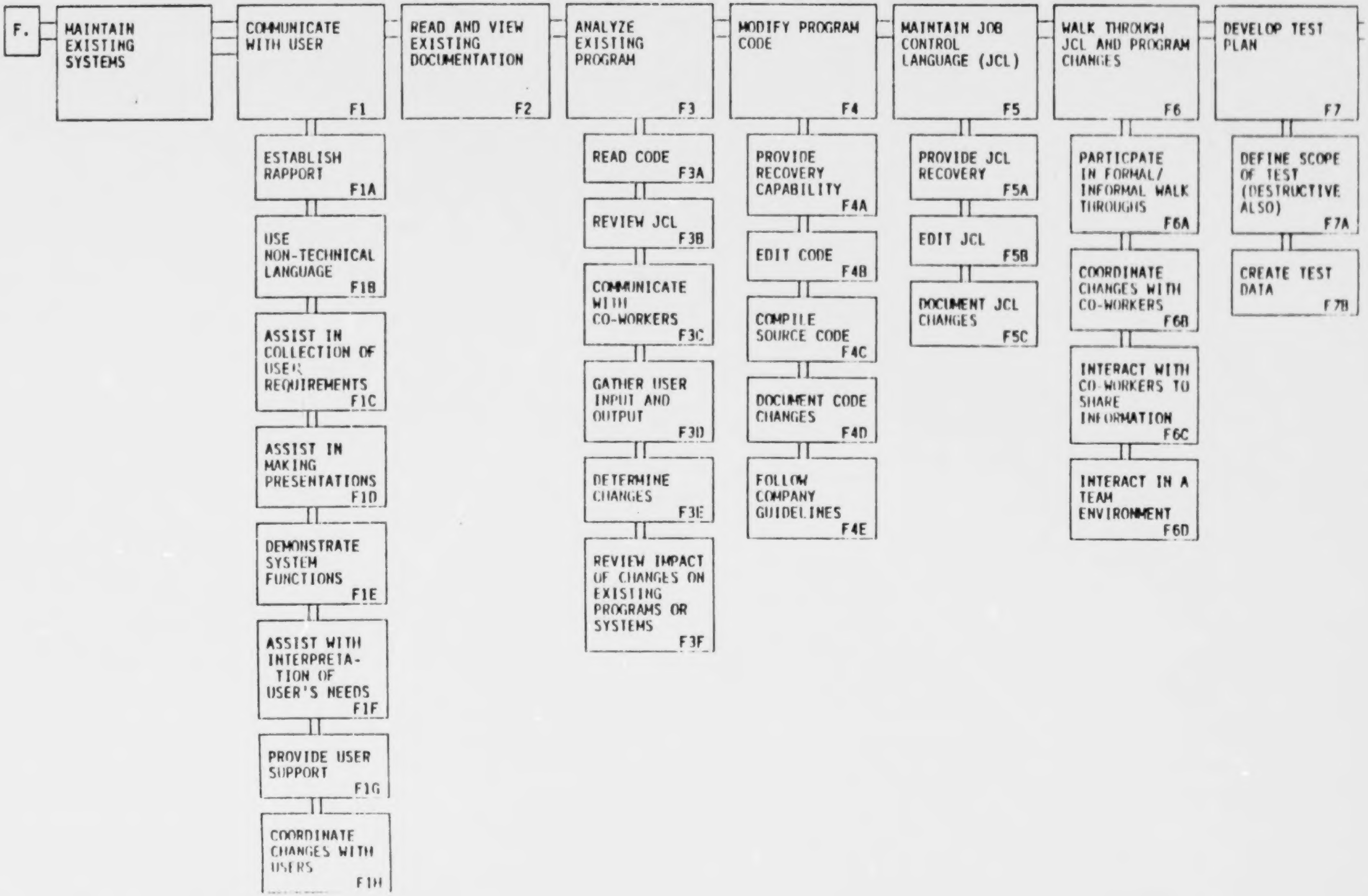
COMPETENCY PROFILE

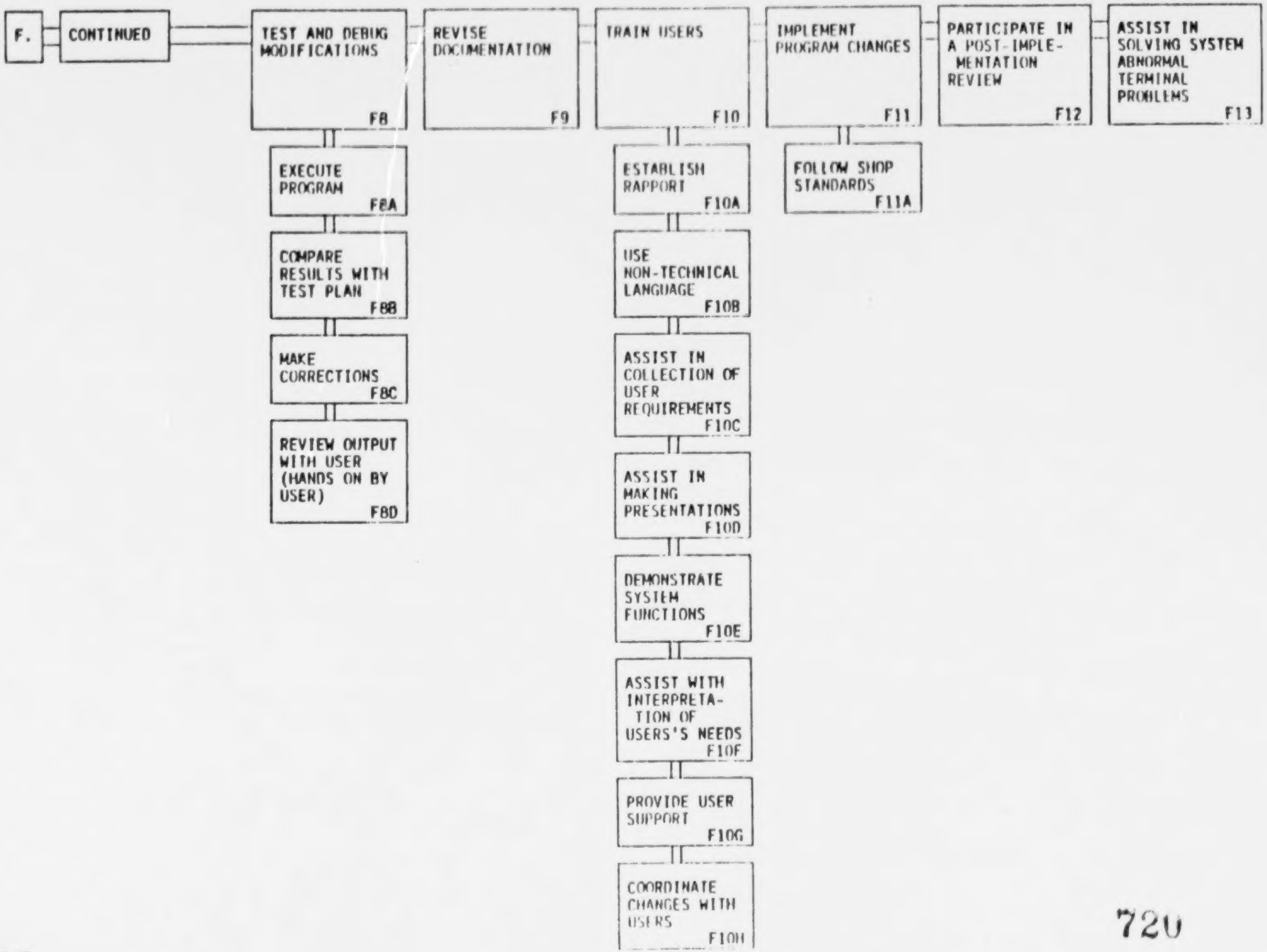
OF

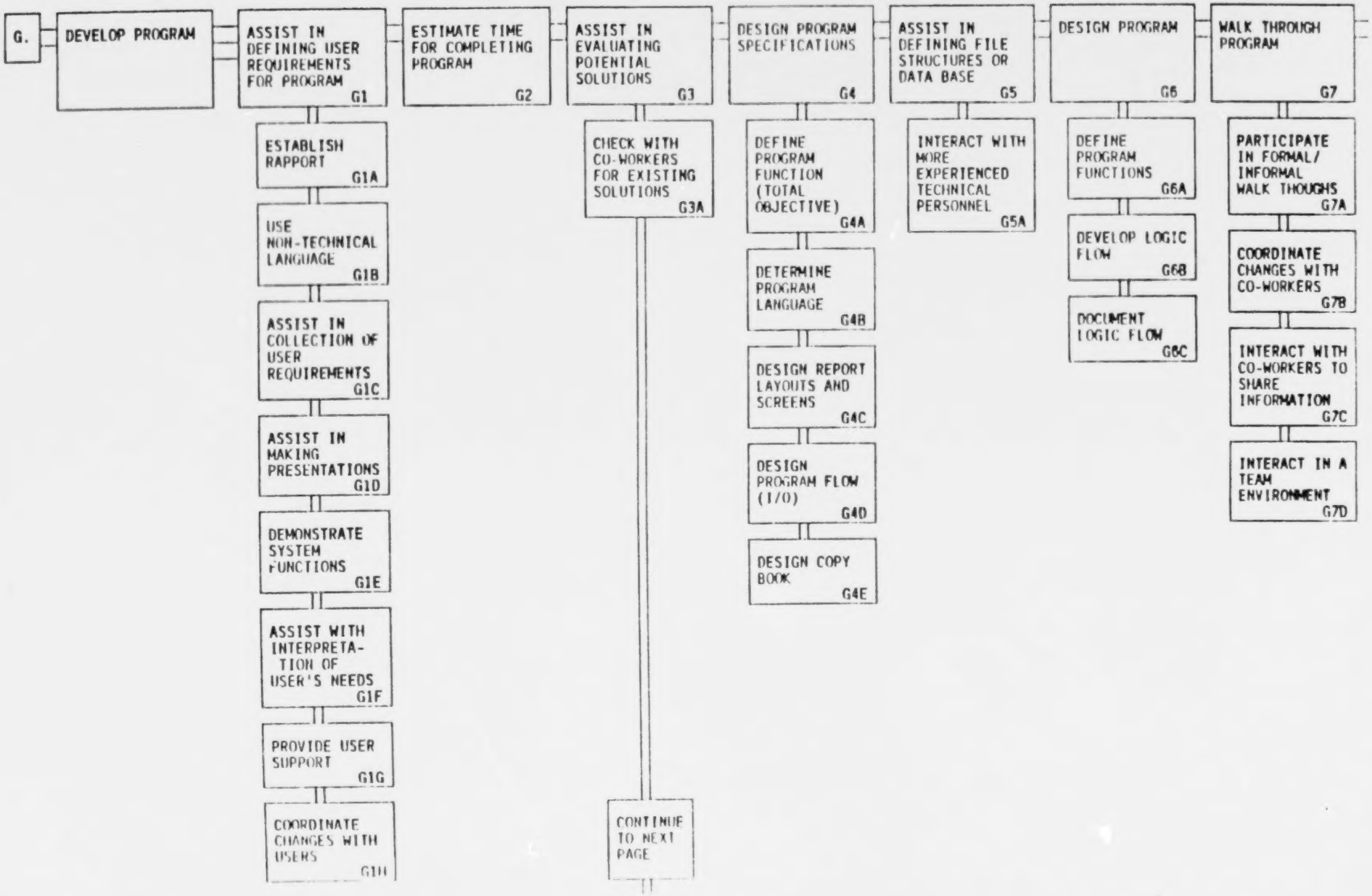
COMPUTER PROGRAMMER/ANALYST

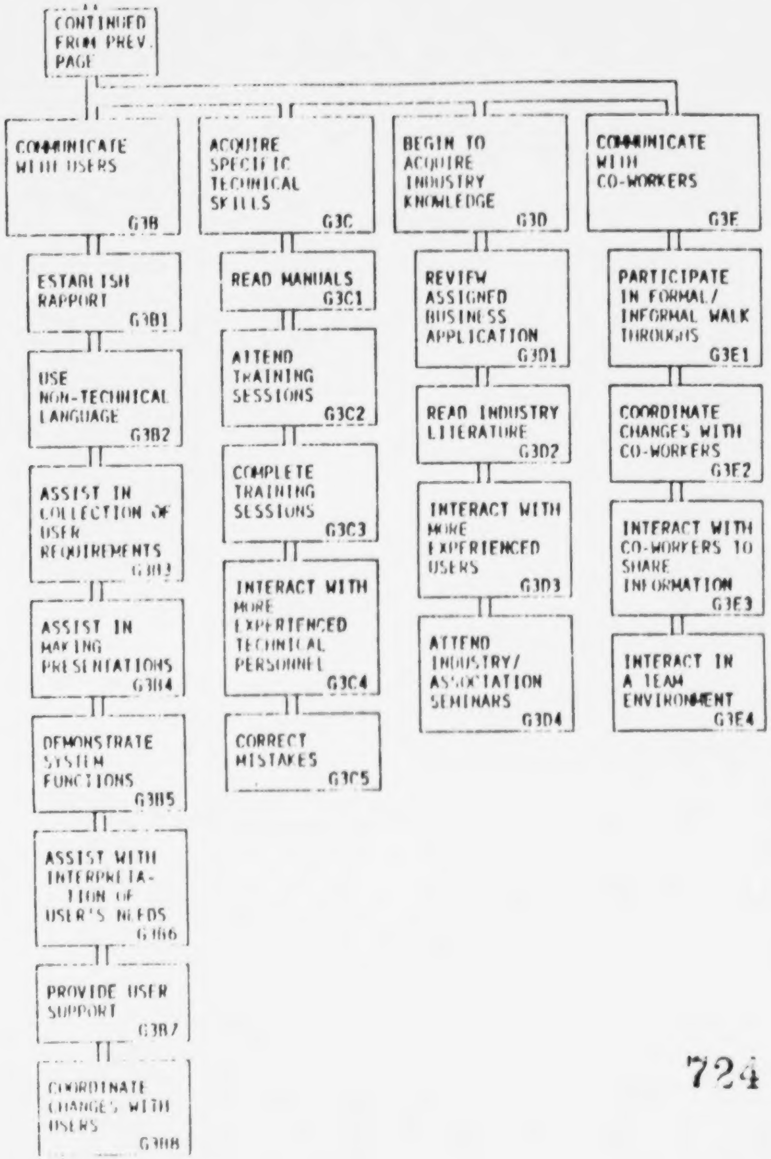
COMPUTER PROGRAMMER/ANALYST DACUM CHART

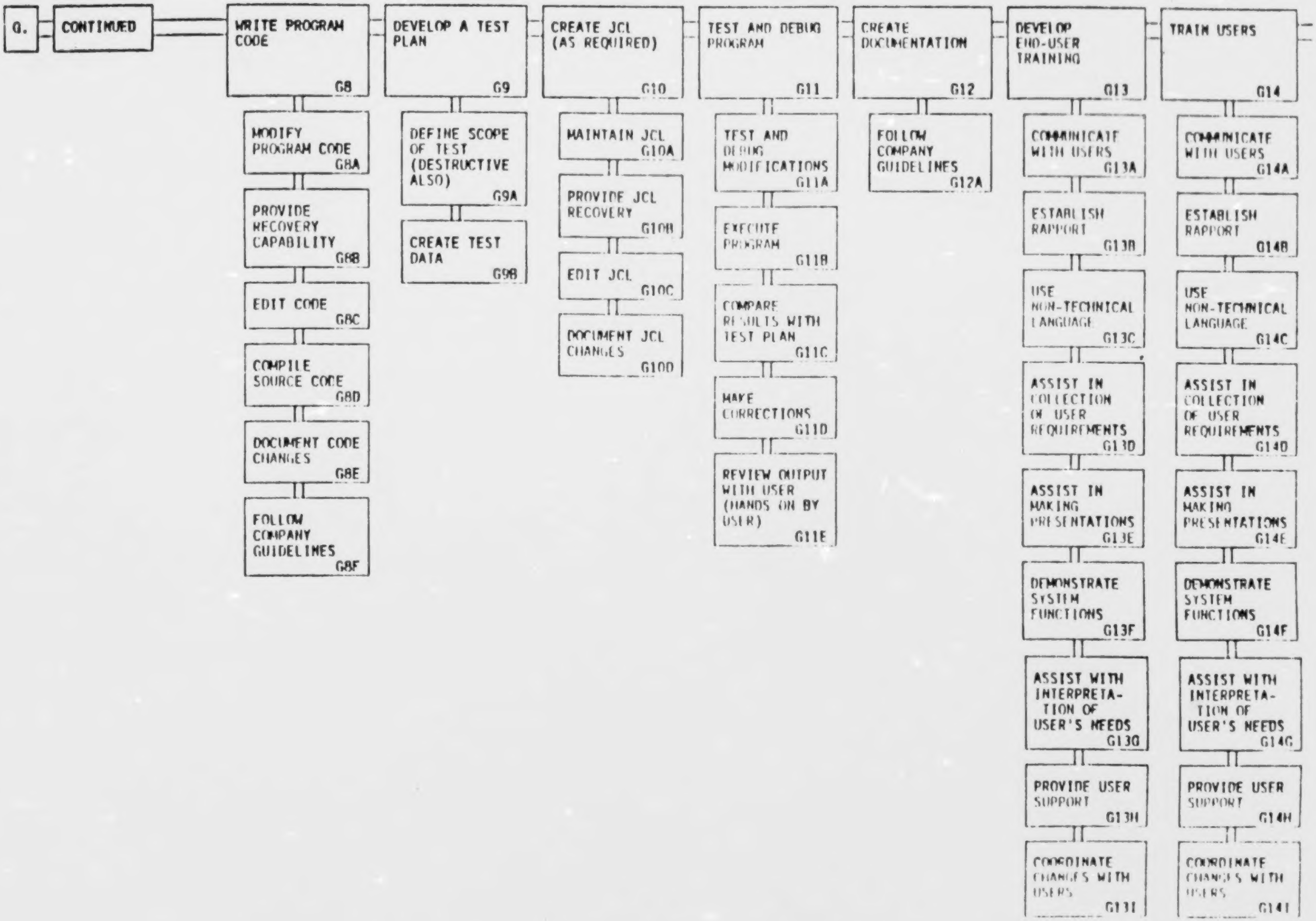
	DUTIES	TASKS						
A.	COMMUNICATE WITH MANAGERS	RECORD TIME A1	WRITE STATUS REPORT A2	STATE PROGRESS ON TASK A3	REPORT PROBLEMS A4	MAKE RECOMMENDATIONS A5	ASSIST IN MAKING PRESENTATIONS A6	
B.	COMMUNICATE WITH USERS	ESTABLISH RAPPORT B1	USE NON-TECHNICAL LANGUAGE B2	ASSIST IN COLLECTION OF USER REQUIREMENTS B3	ASSIST IN MAKING PRESENTATIONS B4	DEMONSTRATE SYSTEM FUNCTIONS B5	ASSIST WITH INTERPRETATION OF USER'S NEEDS B6	PROVIDE USER SUPPORT B7
B.	CONTINUED	COORDINATE CHANGES WITH USERS B8						
C.	ACQUIRE SPECIFIC TECHNICAL SKILLS	READ MANUALS C1	ATTEND TRAINING SESSIONS C2	COMPLETE TRAINING ASSIGNMENTS C3	INTERACT WITH MORE EXPERIENCED TECHNICAL PERSONNEL C4	CORRECT MISTAKES C5		
D.	BEGIN TO ACQUIRE INDUSTRY KNOWLEDGE	REVIEW ASSIGNED BUSINESS APPLICATION D1	READ INDUSTRY LITERATURE D2	INTERACT WITH MORE EXPERIENCED USERS D3	ATTEND INDUSTRY/ ASSOCIATION SEMINARS D4			
E.	COMMUNICATE WITH CO-WORKERS	PARTICIPATE IN FORMAL/INFORMAL WALK THROUGHS E1	COORDINATE CHANGES WITH CO-WORKERS E2	INTERACT WITH CO-WORKERS TO SHARE INFORMATION E3	INTERACT IN A TEAM ENVIRONMENT E4			

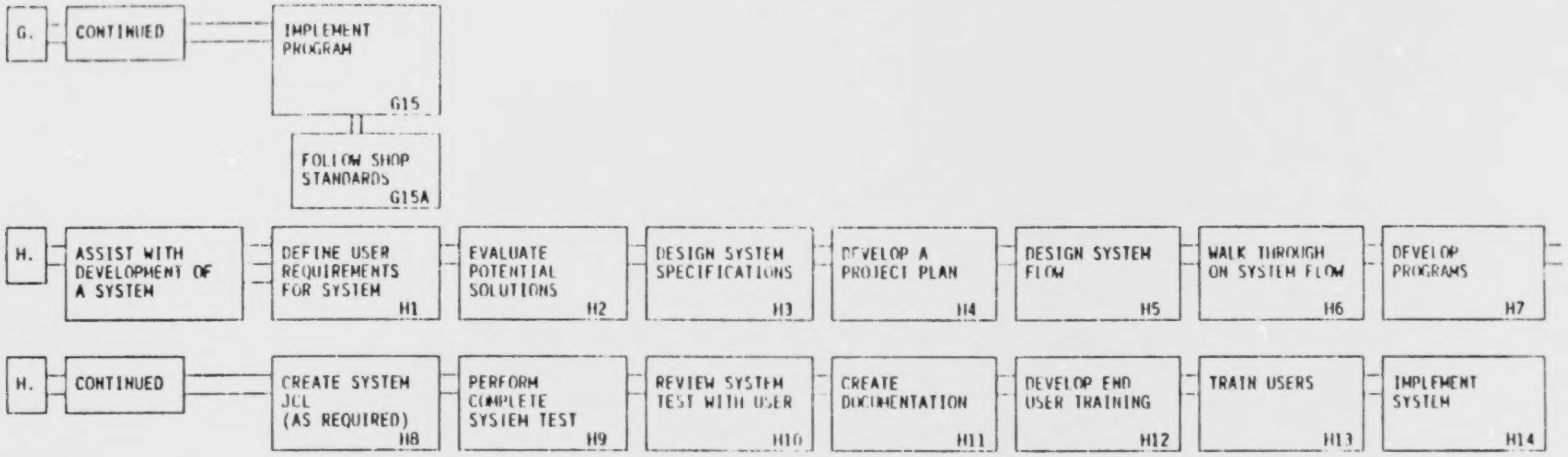

F.
MAINTAIN EXISTING SYSTEMS
COMMUNICATE WITH USER F1
ESTABLISH RAPPORT F1A
USE NON-TECHNICAL LANGUAGE F1B
ASSIST IN COLLECTION OF USER REQUIREMENTS F1C
ASSIST IN MAKING PRESENTATIONS F1D
DEMONSTRATE SYSTEM FUNCTIONS F1E
ASSIST WITH INTERPRETA- TION OF USER'S NEEDS F1F
PROVIDE USER SUPPORT F1G
COORDINATE CHANGES WITH USERS F1H
READ AND VIEW EXISTING DOCUMENTATION F2
ANALYZE EXISTING PROGRAM F3
READ CODE F3A
REVIEW JCL F3B
COMMUNICATE WITH CO-WORKERS F3C
GATHER USER INPUT AND OUTPUT F3D
DETERMINE CHANGES F3E
REVIEW IMPACT OF CHANGES ON EXISTING PROGRAMS OR SYSTEMS F3F
MODIFY PROGRAM CODE F4
PROVIDE RECOVERY CAPABILITY F4A
EDIT CODE F4B
COMPILE SOURCE CODE F4C
DOCUMENT CODE CHANGES F4D
FOLLOW COMPANY GUIDELINES F4E
MAINTAIN JOB CONTROL LANGUAGE (JCL) F5
PROVIDE JCL RECOVERY F5A
EDIT JCL F5B
DOCUMENT JCL CHANGES F5C
WALK THROUGH JCL AND PROGRAM CHANGES F6
PARTICPATE IN FORMAL/ INFORMAL WALK THROUGHS F6A
COORDINATE CHANGES WITH CO-WORKERS F6B
INTERACT WITH CO-WORKERS TO SHARE INFORMATION F6C
INTERACT IN A TEAM ENVIRONMENT F6D
DEVELOP TEST PLAN F7
DEFINE SCOPE OF TEST (DESTRUCTIVE ALSO) F7A
CREATE TEST DATA F7B


F.
CONTINUED
TEST AND DEBUG MODIFICATIONS F8
EXECUTE PROGRAM F8A
COMPARE RESULTS WITH TEST PLAN F8B
MAKE CORRECTIONS F8C
REVIEW OUTPUT WITH USER (HANDS ON BY USER) F8D
REVISE DOCUMENTATION F9
TRAIN USERS F10
ESTABLISH RAPPORT F10A
USE NON-TECHNICAL LANGUAGE F10B
ASSIST IN COLLECTION OF USER REQUIREMENTS F10C
ASSIST IN MAKING PRESENTATIONS F10D
DEMONSTRATE SYSTEM FUNCTIONS F10E
ASSIST WITH INTERPRETATION OF USERS'S NEEDS F10F
PROVIDE USER SUPPORT F10G
COORDINATE CHANGES WITH USERS F10H
IMPLEMENT PROGRAM CHANGES F11
FOLLOW SHOP STANDARDS F11A
PARTICIPATE IN A POST-IMPLEMENTATION REVIEW F12
ASSIST IN SOLVING SYSTEM ABNORMAL TERMINAL PROBLEMS F13


G.
DEVELOP PROGRAM
ASSIST IN DEFINING USER REQUIREMENTS FOR PROGRAM G1
ESTABLISH RAPPORT G1A
USE NON-TECHNICAL LANGUAGE G1B
ASSIST IN COLLECTION OF USER REQUIREMENTS G1C
ASSIST IN MAKING PRESENTATIONS G1D
DEMONSTRATE SYSTEM FUNCTIONS G1E
ASSIST WITH INTERPRETATION OF USER'S NEEDS G1F
PROVIDE USER SUPPORT G1G
COORDINATE CHANGES WITH USERS G1H
ESTIMATE TIME FOR COMPLETING PROGRAM G2
ASSIST IN EVALUATING POTENTIAL SOLUTIONS G3
CHECK WITH CO-WORKERS FOR EXISTING SOLUTIONS G3A
CONTINUE TO NEXT PAGE
DESIGN PROGRAM SPECIFICATIONS G4
DEFINE PROGRAM FUNCTION (TOTAL OBJECTIVE) G4A
DETERMINE PROGRAM LANGUAGE G4B
DESIGN REPORT LAYOUTS AND SCREENS G4C
DESIGN PROGRAM FLOW (I/O) G4D
DESIGN COPY BOOK G4E
ASSIST IN DEFINING FILE STRUCTURES OR DATA BASE G5
INTERACT WITH MORE EXPERIENCED TECHNICAL PERSONNEL G5A
DESIGN PROGRAM G6
DEFINE PROGRAM FUNCTIONS G6A
DEVELOP LOGIC FLOW G6B
DOCUMENT LOGIC FLOW G6C
WALK THROUGH PROGRAM G7
PARTICIPATE IN FORMAL/ INFORMAL WALK THOUGHS G7A
COORDINATE CHANGES WITH CO-WORKERS G7B
INTERACT WITH CO-WORKERS TO SHARE INFORMATION G7C
INTERACT IN A TEAM ENVIRONMENT G7D


CONTINUED FROM PREV. PAGE
COMMUNICATE WITH USERS G3B
ESTABLISH RAPPORT G3B1
USE NON-TECHNICAL LANGUAGE G3B2
ASSIST IN COLLECTION OF USER REQUIREMENTS G3B3
ASSIST IN MAKING PRESENTATIONS G3B4
DEMONSTRATE SYSTEM FUNCTIONS G3B5
ASSIST WITH INTERPRETATION OF USER'S NEEDS G3B6
PROVIDE USER SUPPORT G3B7
COORDINATE CHANGES WITH USERS G3B8
ACQUIRE SPECIFIC TECHNICAL SKILLS G3C
READ MANUALS G3C1
ATTEND TRAINING SESSIONS G3C2
COMPLETE TRAINING SESSIONS G3C3
INTERACT WITH MORE EXPERIENCED TECHNICAL PERSONNEL G3C4
CORRECT MISTAKES G3C5
BEGIN TO ACQUIRE INDUSTRY KNOWLEDGE G3D
REVIEW ASSIGNED BUSINESS APPLICATION G3D1
READ INDUSTRY LITERATURE G3D2
INTERACT WITH MORE EXPERIENCED USERS G3D3
ATTEND INDUSTRY/ ASSOCIATION SEMINARS G3D4
COMMUNICATE WITH CO-WORKERS G3E
PARTICIPATE IN FORMAL/ INFORMAL WALK THROUGHS G3E1
COORDINATE CHANGES WITH CO-WORKERS G3E2
INTERACT WITH CO-WORKERS TO SHARE INFORMATION G3E3
INTERACT IN A TEAM ENVIRONMENT G3E4


G.
CONTINUED
WRITE PROGRAM CODE G8
MODIFY PROGRAM CODE G8A
PROVIDE RECOVERY CAPABILITY G8B
EDIT CODE G8C
COMPILE SOURCE CODE G8D
DOCUMENT CODE CHANGES G8E
FOLLOW COMPANY GUIDELINES G8F
DEVELOP A TEST PLAN G9
DEFINE SCOPE OF TEST (DESTRUCTIVE ALSO) G9A
CREATE TEST DATA G9B
CREATE JCL (AS REQUIRED) G10
MAINTAIN JCL G10A
PROVIDE JCL RECOVERY G10B
EDIT JCL G10C
DOCUMENT JCL CHANGES G10D
TEST AND DEBUG PROGRAM G11
TEST AND DEBUG MODIFICATIONS G11A
EXECUTE PROGRAM G11B
COMPARE RESULTS WITH TEST PLAN G11C
MAKE CORRECTIONS G11D
REVIEW OUTPUT WITH USER (HANDS ON BY USER) G11E
CREATE DOCUMENTATION G12
FOLLOW COMPANY GUIDELINES G12A
DEVELOP END-USER TRAINING G13
COMMUNICATE WITH USERS G13A
ESTABLISH RAPPORT G13B
USE NON-TECHNICAL LANGUAGE G13C
ASSIST IN COLLECTION OF USER REQUIREMENTS G13D
ASSIST IN MAKING PRESENTATIONS G13E
DEMONSTRATE SYSTEM FUNCTIONS G13F
ASSIST WITH INTERPRETA- TION OF USER'S NEEDS G13G
PROVIDE USER SUPPORT G13H
COORDINATE CHANGES WITH USERS G13I
TRAIN USERS G14
COMMUNICATE WITH USERS G14A
ESTABLISH RAPPORT G14B
USE NON-TECHNICAL LANGUAGE G14C
ASSIST IN COLLECTION OF USER REQUIREMENTS G14D
ASSIST IN MAKING PRESENTATIONS G14E
DEMONSTRATE SYSTEM FUNCTIONS G14F
ASSIST WITH INTERPRETA- TION OF USER'S NEEDS G14G
PROVIDE USER SUPPORT G14H
COORDINATE CHANGES WITH USERS G14I


G.
CONTINUED
IMPLEMENT PROGRAM
G15
FOLLOW SHOP STANDARDS
G15A
H.
ASSIST WITH DEVELOPMENT OF A SYSTEM
DEFINE USER REQUIREMENTS FOR SYSTEM
H1
EVALUATE POTENTIAL SOLUTIONS
H2
DESIGN SYSTEM SPECIFICATIONS
H3
DEVELOP A PROJECT PLAN
H4
DESIGN SYSTEM FLOW
H5
WALK THROUGH ON SYSTEM FLOW
H6
DEVELOP PROGRAMS
H7
H.
CONTINUED
CREATE SYSTEM JCL (AS REQUIRED)
H8
PERFORM COMPLETE SYSTEM TEST
H9
REVIEW SYSTEM TEST WITH USER
H10
CREATE DOCUMENTATION
H11
DEVELOP END USER TRAINING
H12
TRAIN USERS
H13
IMPLEMENT SYSTEM
H14

(First Job)
PROGRAMMER/ANALYST

JOB TITLES

- JUNIOR PROGRAMMER/ANALYST
- SOFTWARE ENGINEER
- ANALYST/PROGRAMMER
- ASSOCIATE PROGRAMMER
- SYSTEM ENGINEER

ATTITUDES/TRAITS

- ADAPTABILITY
- WILLINGNESS TO CHANGE
- EXTROVERT PERSONALITY
- DETAIL-ORIENTED
- SELF-MOTIVATED - QUEST FOR KNOWLEDGE
- CORPORATE CITIZEN/VOLUNTEER EFFORT
- OK TO MAKE MISTAKES (ONCE)
- WILLINGNESS TO LEARN FROM MISTAKES
- WILLINGNESS TO ADMIT WHEN YOU NEED HELP
- WILLINGNESS TO SHARE/EXCHANGE INFORMATION WITH CO-WORKERS
- SUPPRESS EGO

KNOWLEDGE/SKILLS

SHOP STANDARDS
  - NAMING
  - CODING
  - DOCUMENTATION
  - JCL

- HOW TO MAKE ORAL AND WRITTEN PRESENTATIONS

- COMMUNICATION SKILLS (Including keyboarding and clerical skills)

- LANGUAGES

  PC
    - BASIC
    - "C"
    - D-BASE-III
    - PASCAL
    - COBOL
    - FORTRAN
    - ASSEMBLY LANGUAGES

  MAINFRAME/MINI COMPUTERS
    - COBOL
    - ASSEMBLY
    - RPG (BIG ON SYSTEM MINIS AND CG's)
    - FORTRAN/SCIENTIFIC
    - FOURTH GENERATION LANGUAGE
      - FOCUS
      - RAMIS
      - SAS

- STRUCTURED PROGRAMMING TECHNIQUES

- CODE GENERATORS

- DATA PROCESS MANAGEMENT

- HIERARCHICAL/RELATIONAL PROGRAMMING
- ON-LINE PROGRAMMING
- "DUMP" READING
- ESTIMATING LENGTH OF TIME FOR PROJECT
- TESTS
  - DESTRUCTIVE WITH INVALID DATA
  - EDIT TESTING
  - OUT OF SEQUENCE/IN SEQUENCE NUMBER OF TRANSACTIONS
  - VOLUME
  - CROSS-TEST VARIETIES OF DATA
  - STRESS-TEST NUMBER OF PEOPLE ON-LINE SIMULTANEOUSLY
- DOCUMENTATION PROGRAMS
  - PSEUDO CODE
  - FLOW CHARTS
  - HIPO (HIERARCHICAL PROCESSING INPUT/PROCESSING OUTPUT)
  - V/TOC (VISUAL TABLE OF CONTENTS)
  - DECISION TABLES
  - WAINER/ORR
  - CHAPIN CHART/NASSI-SCHNEIDER MAP
- DATA BASES
  - IMS/CICS-DL1
  - ADR/DATA-COM
  - ADABAS
  - DB2 and SQL/DS
  - ORACLE (CROSSES MANY MACHINES)
  - INGRES
- TOOLS (SOFTWARE)
  - INTER-TEST)
  - TSO/ISPF)
  - LIBRARIAN) THESE ARE ALL IBM TOOLS
  - PANVALET)
  - ROSCOE)
  - VOLLIE)

FUTURE PROJECTIONS

- EGOLESS PROGRAMMING
- PREPACKAGE APPLICATIONS i.e. "TURN-KEY"
- SHIFT FROM SKILLS IN PROGRAMMING TO RELATIONSHIPS WITH USER -- TO INTERPRET NEEDS AND TO ANALYZE AND DESIGN USER APPLICATIONS
- INCREASE IN INDUSTRY KNOWLEDGE COULD BECOME "USER" ANALYST (PARTICULARLY WITH FOURTH GENERATION LANGUAGES)

- DP IS AUTOMATING ITSELF
- FEWER TECHNICAL PEOPLE EMPLOYED TO DEVELOP SYSTEM/SOFTWARE PACKAGES; MOST WILL BE USER ANALYSTS
- PC PROLIFERATING-MORE FUNCTIONS
    - LINKS TO MAINFRAME
    - MAINFRAME CAPABILITY MOVES TO DESKTOP
    - MAINFRAME MAINTAINS CENTRALIZED DATABASE
    - DATABASE/CENTRALIZED-DATA PROCESSING DECENTRALIZED

2 + 2 + 2 ARTICULATION PROJECT

1987 - 1988

DALLAS COUNTY COMMUNITY COLLEGE DISTRICT

APPENDIX I

SUGGESTED LESSON PLAN

APPENDIX I: DATA ENTRY PROCEDURES

ESSENTIAL ELEMENT: 75.87 (e)(1)

ALLOCATED TIME: As needed

UNIT OBJECTIVE: Students will use the touch system of keyboarding, will build greater speed and accuracy in data entry, and will understand the advantages of data entry skills for computer users.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Identify and correctly use the additional keys on a computer keyboard.
2. Demonstrate correct finger use for touch typing.
3. Type with increased speed and accuracy.
4. Describe the advantages of using a mouse in moving around the keyboard.

FOCUS: Despite advances toward more sophisticated input techniques, such as text scanners and voice recognition, keyboarding remains the principal method of original data entry. Computer keyboards, which historically came in many varieties, are now approaching a greater degree of standardization. Students will benefit from the time they invest in developing and improving their data entry skills.

DOMAINS: Activities and competency tests have been designed to provide learning experiences utilizing the cognitive, psychomotor, or affective domains. Activities and competency tests are coded on the Activity and Competency Test Matrices.

BASIC SKILLS: Activities and competency tests have been designed to reinforce the basic skills of reading, writing, and/or mathematics. Activities and competency tests have been coded on the Activity and Competency Test Matrices.

CONTENT OUTLINE

I. Comparisons of computer and electronic keyboards
  A. Techniques of basic keyboarding
  B. Use of special keys
  C. Hints on gaining speed
  D. Hints on gaining accuracy

II. Using a mouse
  A. Definition
  B. Advantages
  C. Operating a mouse
  D. Menus
  E. Using a mouse with dialog boxes
  F. Graphic interfaces

SUGGESTED TEACHER ACTIVITIES

General Teacher Preparation

1. Preview the unit.
2. Review unit objectives.
3. Make instructional analysis.
4. Assess student learning needs.
5. Decide on lesson domain: cognitive, psychomotor, or affective domain.
6. Select instructional materials based on instructional analysis and student learning needs.
7. Select instructional strategies based on lesson content and student learning needs.
8. Prepare lesson plans from the unit lesson.
9. Prepare additional instructional material.
10. Reserve necessary media and equipment.

Teacher Presentation

1. Present student objectives.
2. Establish rapport with students.
3. Review lesson objectives with students.
4. Relate lesson to prior or future learning.
5. When appropriate, encourage student interaction through questioning, discussions, or some other strategy.
6. Emphasize the value/importance of the unit or activity.
7. Allow time for closure of a lesson.

Reteach Activities

1. Identify area(s) of weakness from results of evaluation.
2. Select unit activities not previously used.
3. Use additional resources and/or create materials based on student learning needs.
4. Use a different teaching strategy in reteaching.
5. Retest.

Specific Teaching Activities

1. Most teachers will be faced with a mix of students who know keyboarding and students who do not. It is advantageous for students to learn keyboarding by touch; however, you should not spend too much time helping students who missed typewriting classes to progress to the skill level of the experienced students.

2. Many very good software programs that teach keyboarding skills are available for a nominal cost. These programs work without supervision, and many are very game-like and fun to work with. These types of programs would be an excellent resource for helping those students who missed typing to develop their skills. See the resource list in Section I for a complete list.

3. As graphic interfaces and graphics programs become more popular, the use of a mouse is becoming increasingly important in the microcomputer world. Mice also speed the operation of many other types of programs, and are available for a nominal cost from many computer dealers. Prices start around $50. Even if your lab is not equipped with mice, you can still teach concepts such as menus and dialog boxes using your keyboard. It is suggested that your class visit a computer store, business, or school computer lab that uses mice so that students can see how they are used.

4. This is a time to observe your students and catch their technique errors. Walk around the room as they are keyboarding exercises and give them personal suggestions on improvements that they might make.

Activity 2

Project 1	Touch-typing software is needed to complete this activity. This software is readily available, inexpensive, and is the best source for teaching touch-typing skills.
Project 2	Secure several exercises for the students to type and print. Require them to proofread and make on-screen corrections right from the start.
Project 3	Secure ten-key by touch, data entry software. This will work two ways, it will teach the ten-key adding machine and improve numerical data entry.

Activity 3 You will probably need to use two types of keyboarding software--one program that will individually teach typing to students with little or no keyboarding skills and another program that is strictly for skill building. Make sure that the students keep track of their speed and accuracy. After they have worked on the skill-building software for a few days, organize a competition where they can only record a score if it is 95% correct or better, the speed has increased a specified number of words, etc. You may wish to give bonus points for those who get 100% accuracy. Do not let the keyboarding stop here. Have students take two to three timed writings immediately as they walk in the classroom.

Activity 4

Project 1 Have the students show what they find, and for each new type of menu or dialog box found, prepare a place in the classroom to display them. Discuss the differences.

Project 2 Demonstrate how to use a mouse. Discuss where and how it is connected. Have students work in pairs and have them move it around on a document that you have prepared. Prepare a worksheet for them to fill in when they get to a specific location. Ideally there should be several machines equipped with mice.

NOTE: If this is not possible, have a student that has a mouse bring it to class and demonstrate it, or ask a local computer dealer to come and demonstrate its use.

Competency Test The competency test is designed to cover all the competencies.

ACTIVITY MATRIX

Activities	**Domains**			**Basic Skills**		
	Cognitive	**Psycho-motor**	**Affective**	**Reading**	**Writing**	**Math**
1	X			X		
2 Project 1	X	X		X		
Project 2	X	X		X	X	
Project 3	X	X		X		
3	X	X		X	X	
4 Project 1	X			X		
Project 2	X	X		X		

COMPETENCY TEST MATRIX

Parts	Domains			Basic Skills		
	Cognitive	Psycho-motor	Affective	Reading	Writing	Math
All	X			X	X	

COMPETENCY TEST

1. Describe the differences and similarities between the computer and the electronic keyboard.

2. List the eight keys that are in the home position on the alphabetic keyboard.

3. Finish this diagram showing the location of the numbers on the numeric key pad on a computer keyboard.

___ ___ ___
___ ___ ___
___ ___ ___

4. The top-row numbers on the alphabetic keyboard also serve as ____________ marks when the shift key is depressed.

5. The __________ key enables the entry of numbers on the numeric key pad.

6. When the NumLock key is not depressed, the keys perform __________ movement control functions.

7. LED stands for __________ __________ ____________.

8. ___________ keys move the cursor one space in any of the four directions. If the *ScrollLock* is depressed, these keys move the *document* one space in any direction.

9. __________ moves the document *up* on the page (screen).

10. __________ moves the document *down* on the page (screen).

11. __________ moves the cursor to the upper left space on the screen.

12. __________ moves the cursor to the lower left space on the screen.

13. __________ moves the cursor back one space, deleting the character which occupied that space.

14. __________ is the same key normally thought of as a return key on a typewriter. On a computer, it is used to tell the computer to process whatever instruction was just typed.

15. __________ is used to get out of certain programs or menu structures.

16. _________ changes the functions of the cursor movement keys (arrows, etc.) from moving the cursor to moving the document within the screen window.

17. _________ prints the screen when depressed (may not work on some application programs).

18. _________ can be used to take out screen characters that are highlighted by the cursor.

19. _________ can be used to put in characters from the scrap.

20. _________ keys are 10 or 12 keys that can be assigned functions by the software application program.

21. System _________ keys are sometimes used in combination with other keys to allow other keys to perform more than one function. Examples are CTRL, ALT, and ESC.

22. The ability to enter _________ on the numeric key pad by touch is very important for spreadsheets and calculations.

23. Describe the importance of speedy data entry on a computer.

24. Describe the importance of accurate data entry on a computer.

25. List three advantages of using a mouse rather than using standard keyboard entry procedures.

    A.

    B.

    C.

26. What is a mouse?

27. Operating a mouse is one of the simplest concepts in learning to operate a computer. It can be summed up by two words: ____________ and __________.

28. To __________ means to move the mouse until it points to whatever option or command you want to enter.

29. The mouse may have one, two, or three buttons. The use of these buttons corresponds to the enter key used on a keyboard. To _________ means to press one of these buttons.

30. Define chording.

31. On-screen commands are chosen from a __________.

32. A menu set up in a tree structure is known as a ___________ menu.

33. Many newer programs contain _________ boxes. These are boxes containing choices from which the user can select. The operation of the program is greatly simplified and made easier. The user simply points and clicks.

ANSWERS TO ACTIVITIES

Activity 1

1. D
2. E
3. G
4. A
5. B
6. C
7. F
8. L
9. M
10. N
11. H
12. K
13. P
14. J
15. Q
16. T
17. O
18. U
19. V
20. I
21. R
22. Y
23. S
24. Z
25. W
26. X

Activity 2

Projects 1-3 Evaluated to the satisfaction of the instructor.

Activity 3 Evaluated to the satisfaction of the instructor.

Activity 4

Projects 1-2 Evaluated to the satisfaction of the instructor.

COMPETENCY TEST ANSWERS

1. Answers will vary: computer has more keys, function keys, control keys, etc.
2. a s d f j k l ;
3. 7 8 9
   4 5 6
   1 2 3
4. Punctuation
5. NumLock
6. Cursor
7. Light Emitting Diode
8. Arrow
9. PageUp
10. PageDown

11. Home
12. End
13. Backspace
14. Enter
15. Escape
16. ScrollLock
17. PrintScr
18. Delete
19. Insert
20. Function
21. Control
22. Numbers
23. A user who can enter data fast is much more effective than one who cannot.
24. Errors may be repeated in later processing steps.
25. A. Commands can be selected from screen
    B. No typing, no memorization
    C. Moving around screen is easier
26. A pointing device for the screen.
27. Point, click
28. Point
29. Click
30. When more than one button on a mouse is pressed at once
31. Menu
32. Nested menu
33. Dialog

COMPETENCY CHECKLIST

ESSENTIAL ELEMENT: 75.87(e)(1)

The students will be provided opportunities to demonstrate the ability to enter, manipulate, and retrieve data on a computer terminal; and understand concepts of networked and multiuser configuration.

OBJECTIVE: **Students will use the touch system of keyboarding, will build greater speed and accuracy in data entry, and will understand the advantages of data entry skills for computer users.**	MASTERY	NON-MASTERY
1. Identify and correctly use the additional keys on a computer keyboard.	______	______
2. Demonstrate correct finger use for touch typing.	______	______
3. Type with increased speed and accuracy.	______	______
4. Describe the advantages of using a mouse in moving around the keyboard.	______	______
	______	______
	______	______
	______	______

STUDENT NAME ______________________________

APPENDIX I: DATA ENTRY PROCEDURES

UNIT OBJECTIVE: Students will use the touch system of keyboarding, will build greater speed and accuracy in data entry, and will understand the advantages of data entry skills for computer users.

STUDENT COMPETENCIES: After completing this unit, the student will be able to:

1. Identify and correctly use the additional keys on a computer keyboard.
2. Demonstrate correct finger use for touch typing.
3. Type with increased speed and accuracy.
4. Describe the advantages of using a mouse in moving around the keyboard.

FOCUS: Despite advances toward more sophisticated input techniques, such as text scanners and voice recognition, keyboarding remains the principal method of original data entry. Computer keyboards, which historically came in many varieties, are now approaching a greater degree of standardization. Students will benefit from the time they invest in developing and improving their data entry skills.

TERMINOLOGY

Arrows	These keys move the cursor one space in any of the four directions.
Backspace	Moves the cursor back one space, deleting whatever character occupied that space.
Chording	Pressing two or three buttons on a mouse at once.
Click	Pressing one, two or three buttons on a mouse.
Delete	This key can be used to delete screen characters that are highlighted by the cursor.
Dialog boxes	These are boxes containing choices from which the user can select. The operation of the program is greatly simplified and made easier by the use of dialog boxes.
End	Moves the cursor to the lower left space on the screen.
Enter	This key is used to tell the computer to process whatever instruction was just typed.
Escape	This special key is usually program-specified to escape from certain programs or menu structures.
Function keys	Usually, 10 or 12 keys that can be assigned functions by the software application program.
Home	Moves the cursor to the upper left space on the screen.
Insert	This key can be used to add characters from the scrap. (May differ from application program to application program.)
Menus	A menu is simply a list of commands arranged by the programmer in a certain area, usually along the top or bottom of the screen.
Mouse	A pointing device for the computer screen.
Nested menus	A set of menus arranged in a tree structure.
Number Pad	The ten-key arrangement of numbers on the right side of the keyboard.
NumLock	Enables the number key pad to be used for entering numbers.
PageDown	This key moves the document *down* one screen.

PageUp	This key moves the document *up* one screen.
Point	Point means to move the mouse unit until it points to whatever option or command you want to enter.
Pop-down menus	Menus that are designed to pop down from the top of the screen when their parent command is selected.
Pop-up menus	Designed to pop-up when their parent command is selected.
Print Scr	Prints the screen when depressed. (May not work on some application programs.)
ScrollLock	Changes the functions of the cursor movement keys (arrows, etc.) from moving the cursor, to moving the document within the screen window.
System control keys	Keys used in combination with other keys which allow other keys to perform more than one function.

UNIT OVERVIEW

I. General comparison between the computer keyboard and the electronic keyboard

   A. Basic data entry techniques

      1. Learning to type on a computer--fingering for letter keys is identical to fingering for a typewriter. Additional keyboard sections are different, such as the function and numeric keypads. The keyboard can be divided into separate parts for easier learning.

      2. Entering data

         a. **Alphabetic keys**--thought of as those that are the same on any typewriter keyboard. They include:

            (1) **Alphabet**--the standard alphabet keys; those on the home row, and those above and below the home row.

            (2) **Top row numbers**--numbers that are in the same position as on a typewriter.

            (3) **Punctuation**--includes the period, comma, semicolon, and others. These keys are also in the same position as on a typewriter, and can be activated by holding down the shift key and pressing the key needed.

         b. Entering data using the numeric keys

            (1) **Numeric keypad** (not available on all keyboards)--the numeric keypad is similar to a ten-key adding machine.

            (2) Some keyboards combine the numeric keypad with cursor control function.

               (a) Each of the nine keys will perform two separate functions selectable with the NumLock key.

               (b) When the NumLock key is not depressed, the keys perform ordinary cursor movement control functions.

               (c) When the NumLock is depressed, the keys can enter numbers in the standard ten-key by touch method. Most keyboards have a small LED (Light Emitting Diode) which comes on when the NumLock function is enabled.

c. Keyboards also have regular number keys above the alphabetic keys which may be used at any time to enter numbers, whether the NumLock key is depressed or not.

B. The use of special keys on the computer keyboard

1. **Special keys**--used for special computer tasks, and are not available on a typewriter.

a. Cursor movement keys control cursor movement in relation to the screen, and perform the following functions:

(1) **Arrow keys**--move the cursor one space in any of the four directions.

(2) **PageUp key**--moves the document up one screen.

(3) **PageDown key**--moves the document down one screen.

(4) **Home key**--moves the cursor to the upper left space on the screen, or to the beginning of the current line.

(5) **End key**--moves the cursor to the lower left space on the screen, or to the end of the current line.

(6) **Backspace key**--moves the cursor back one space, deleting the character occupied in that space.

b. Other specialized keys

(1) **Enter key**--used to tell the computer to process whatever instruction was just typed. This is the same key normally thought of as a return on a typewriter.

(NOTE: On word processors, there is no need to hit the return key after every line entered. Word processors have a function called word wrap which automatically adjusts the line breaks to fit within the specified margins.)

(2) **Escape key**--a special key that is usually program specified to escape from certain programs or menu structures.

(3) **NumLock key**--enables the number key pad. Usually an LED also comes on.

(4) **ScrollLock key**--changes the function of the cursor movement keys (arrows, etc.) from moving the cursor to moving the document within the screen window.

(5) **PrintScr key**--prints the screen when depressed. (This may not work on some application programs.)

(6) **Delete key**--can be used to erase screen characters that are highlighted by the cursor.

(7) **Insert key**--can be used to add characters from the scrap. (May differ from application program to application program.)

2. Function keys (vary with computer)

   a. Usually 10 or 12 keys that can be assigned functions by the software application program.

   b. Since keyboards differ, the 10 or 12 keys may be located to the left of the alphabetic keys, or located on the top row above the number and punctuation keys.

3. System control keys are sometimes used in combination with other keys to allow other keys to perform more than one function. Examples are CTRL, ALT, OPEN APPLE, and ESC.

C. Hints on gaining speed

1. Unlearning incorrect fingering--people who have experience with a computer keyboard, but have not learned the touch-typing method, usually have some bad habits to unlearn.

2. A computer user, particularly one who enters a lot of data, is much more effective when able to type fast.

   a. Pretest--find typing speed prior to unit training.

   b. Minimum requirement--the level needed to achieve acceptable productivity for that particular application program.

      (1) Entering text through the keyboard by touch is very important for word processing.

      (2) The ability to enter numbers on the number pad by touch is very important for spreadsheets and calculations.

      (3) Many operations such as databases require data in both numeric and alphabetic formats.

D. Hints on gaining accuracy

1. Since any keystroke can be voided with the backspace key, keyboard accuracy on a computer becomes partly a matter of speed and efficiency.

2. Errors that go unrecognized at the time they are made require different treatment and are more serious because the error can be perpetuated through later processing steps.

3. Acceptable standards--for some applications, 100% is the only acceptable level. As a result, verifying or proofreading must be part of the data entry operation.

4. Methods for measuring--calculating accuracy can be done in the same manner as in typing courses, but error correction completed during data entry affects speed only. The computer can compare two versions of data and flag every discrepancy.

II. Using a mouse--in recent years, application programmers have begun to rely heavily on the mouse. Nearly all software products currently on the market have drivers for several types of mice. This expansion began after the success of the Macintosh computer which used a graphic interface that made its operation much simpler.

A. A mouse is a pointing device for the computer screen. The mouse moves along a desktop, and the movements on the desktop are matched with movements of the cursor on the screen.

B. The advantages of a mouse

1. The primary advantage of using a mouse is that commands can be selected from the screen.

2. This means that command names do not have to be typed in letter for letter, and therefore, they need not necessarily be memorized.

3. Commands can be chosen from an on-screen display. A mouse also makes moving around the screen much simpler.

C. Operating a mouse is one of the simplest concepts involved with learning about operating a computer. It can be summed up by two words: point and click.

1. Point means to move the mouse until it points to whatever option or command you want to enter.

2. Clicking one of the mouse's one, two, or three buttons corresponds to the enter key used on a keyboard.

a. When there are two or three buttons, the buttons can be used for other functions.

b. When two or three buttons are pressed at once, it is known as chording.

c. A two-button mouse can handle three separate functions and a three-button can handle seven.

d. In addition, some programs resort to double-clicking (clicking twice within a relatively short time period).

D. Menus

1. The on-screen display from which commands are chosen with a mouse is called a menu.

2. A menu is simply a list of commands arranged by the programmer in a certain area, usually along the top or bottom of the screen. When the mouse points to and clicks on one of these commands, it is entered into the program.

3. Concept of nested menus--often, programmers will set up commands in a tree structure.

a. Each time a command is clicked, the program takes the user one level deeper in the tree structure and brings up a sub-menu. Each sub-menu is nested inside a term or command on the next higher level.

b. This tree structure is similar to the file structure found on MS-DOS hard disks. The next higher level is often thought of as the parent of the lower level commands under it.

4. Pop-up and pop-down menus--are designed to pop up (or down) when their parent command is selected. These menus are very efficient because they do not block or replace the parent menu; the entire structure is seen at once.

5. Many software programs allow the user to program custom menus of commands they use most often.

E. Using a mouse with dialog boxes

1. Many newer programs contain dialog boxes. These boxes contain choices from which the user can select.

2. The operation of the program is greatly simplified and made easier. The user simply points and clicks.

F. Graphic interfaces

1. When the Macintosh Plus was introduced, it contained a graphic interface which made its operations much simpler.

2. All commands to the operating system could be selected from menus. This greatly simplifies the operation of the computer, and means that new users can be productive with far less training.

3. Similar interfaces have since been introduced for IBM compatible computers including Deskview, Microsoft Windows, and the PS/2 Presentation Manager.

ACTIVITY 1: TERMINOLOGY

INSTRUCTIONS: Write the letter of the correct definition in the blank in front of the corresponding term.

A. PageDown
B. Home
C. Backspace
D. Number Pad
E. Arrow
F. PageUp
G. End
H. PrintScr
I. Delete
J. Insert
K. Enter
L. ScrollLock
M. System control
N. NumLock
O. Mouse
P. Chording
Q. Function keys
R. Menu
S. Nested menu
T. Escape
U. Point
V. Dialog boxes
W. Click
X. Graphic interface
Y. Pop-up menus
Z. Pop-down menus

_____ 1. The _____ is the ten-key arrangement of numbers on the right side of the keyboard.

_____ 2. The _____ keys move the cursor one space in any of the four directions. If the *ScrollLock* is depressed, these keys move the *document* one space in any direction.

_____ 3. The _____ key moves the document *up* on the screen.

_____ 4. The _____ key moves the document *down* on the screen.

_____ 5. The _____ key moves the cursor to the upper left space on the screen.

_____ 6. The _____ key moves the cursor to the lower left space on the screen.

_____ 7. The _____ moves the cursor back one space, deleting the character which occupied that space.

_____ 8. _____is normally thought of as a return key on a typewriter.

_____ 9. The _____ key is used to get out of certain programs or menu structures.

_____10. The _____ key enables the number key pad to enter numbers.

_____11. The _____ key changes the functions of the cursor movement keys (arrows, etc.) from moving the cursor to moving the document within the screen window.

_____12. The _____ key prints the screen when depressed.

_____13. The _____ key can be used to delete screen characters that are highlighted by the cursor.

_____14. The _____ key can be used to put in characters from the scrap.

_____15. The _____ _____ are 10 or 12 keys that can be assigned functions by the software application program.

_____16. The _____ _____ keys are sometimes used in combination with other keys to allow other keys to perform more than one function.

_____17. A _____ is a pointing device for the computer screen.

_____18. To _____ means to move the mouse until the cursor points to whatever option or command you want to enter.

_____19. The mouse may have one, two, or three buttons. To _____ means to press one of these buttons.

_____20. When two or three buttons on a mouse are pressed at once, it is known as _____.

_____21. A _____ is simply a list of commands arranged by the programmer in a certain area, usually along the top or bottom of the screen.

_____22. A _____ _____ is a set of menus arranged in a tree structure.

_____23. _____ _____ are menus that are designed to pop up when their parent command is selected.

_____24. _____ _____ are menus that are designed to pop down from the top of the screen when their parent command is selected.

_____25. _____ _____ are boxes containing choices from which the user can select.

_____26. When the Macintosh Plus was introduced, it contained a _______ _________ which made its operations much simpler.

ACTIVITY 2: PRACTICING TOUCH-TYPING

Project 1

INSTRUCTIONS: **Using appropriate touch-typing software and typing exercises provided by your teacher, enter data for the typing exercises, maintaining a satisfactory level of accuracy. Make sure that you feel confident of every key location. Any keys that you have difficulty remembering, complete additional exercises on those specific keys. Remember to keep your eyes on the screen.**

Project 2

INSTRUCTIONS: **Using software and exercises provided by your teacher, enter text for at least five documents, maintaining a satisfactory level of accuracy.**

Project 3

INSTRUCTIONS: **Using ten-key by touch data entry software provided by your teacher, complete at least three exercises maintaining a satisfactory level of accuracy.**

ACTIVITY 3: IMPROVING SPEED AND ACCURACY

INSTRUCTIONS: **Using typing skill-building software, repeat the drills until you have increased your words per minute at least ten words and until you consistently maintain an accuracy level of at least 95%. Use the Skill Building Chart to record your progress.**

ACTIVITY 3 (Continued)

SKILL BUILDING CHART

Date	Timing No.	Speed	Accuracy %	Date	Timing No.	Speed	Accuracy %

ACTIVITY 4: MANIPULATING DATA WITH A MOUSE

Project 1

INSTRUCTIONS: Collect five (5) pictures from advertisements in computer magazines that show examples of menus and dialog boxes. Mount them neatly so that they may be displayed in your classroom.

Project 2

INSTRUCTIONS: If a mouse is available in the school computer lab, complete several exercises using it with software programs provided by your teacher. If a mouse is not available on campus, visit a local computer store to see a mouse in operation.

COMPLIANCE STATEMENT

TITLE VI, CIVIL RIGHTS ACT OF 1964; THE MODIFIED COURT ORDER, CIVIL ACTION 5281, FEDERAL DISTRICT COURT, EASTERN DISTRICT OF TEXAS, TYLER DIVISION

Reviews of local education agencies pertaining to compliance with Title VI Civil Rights Act of 1964 and with specific requirements of the Modified Court Order, Civil Action No. 5281, Federal District Court, Eastern District of Texas, Tyler Division are conducted periodically by staff representatives of the Texas Education Agency. These reviews cover at least the following policies and practices:

(1) acceptance policies on student transfers from other school districts;

(2) operation of school bus routes or runs on a non-segregated basis;

(3) nondiscrimination in extracurricular activities and the use of school facilities;

(4) nondiscriminatory practices in the hiring, assigning, promoting, paying, demoting, reassigning, or dismissing of faculty and staff members who work with children;

(5) enrollment and assignment of students without discrimination on the basis of race, color, or national origin;

(6) nondiscriminatory practices relating to the use of a student's first language; and

(7) evidence of published procedures for hearing complaints and grievances.

In addition to conducting reviews, the Texas Education Agency staff representatives check complaints of discrimination made by a citizen or citizens residing in a school district where it is alleged discriminatory practices have occurred or are occurring.

Where a violation of Title VI of the Civil Rights Act is found, the findings are reported to the Office for Civil Rights, Department of Health, Education and Welfare.

If there is a direct violation of the Court Order in Civil Action No. 5281 that cannot be cleared through negotiation, the sanctions required by the Court Order are applied.

TITLE VII, CIVIL RIGHTS ACT OF 1964; EXECUTIVE ORDERS 11246 AND 11375; TITLE IX, 1973 EDUCATION AMENDMENTS; REHABILITATION ACT OF 1973 AS AMENDED; 1974 AMENDMENTS TO THE WAGE-HOUR LAW EXPANDING THE AGE DISCRIMINATION IN EMPLOYMENT ACT OF 1967; AND VIETNAM ERA VETERANS READJUSTMENT ASSISTANCE ACT OF 1972 AS AMENDED IN 1974.

It is the policy of the Texas Education Agency to comply fully with the nondiscrimination provisions of all federal and state laws and regulations by assuring that no person shall be excluded from consideration for recruitment, selection, appointment, training, promotion, retention, or any other personnel action, or be denied any benefits or participation in any programs or activities which it operates on the grounds of race, religion, color, national origin, sex, handicap, age, or veteran status (except where age, sex, or handicap constitute a bona fide occupational qualification necessary to proper and efficient administration). The Texas Education Agency makes positive efforts to employ and advance in employment all protected groups.

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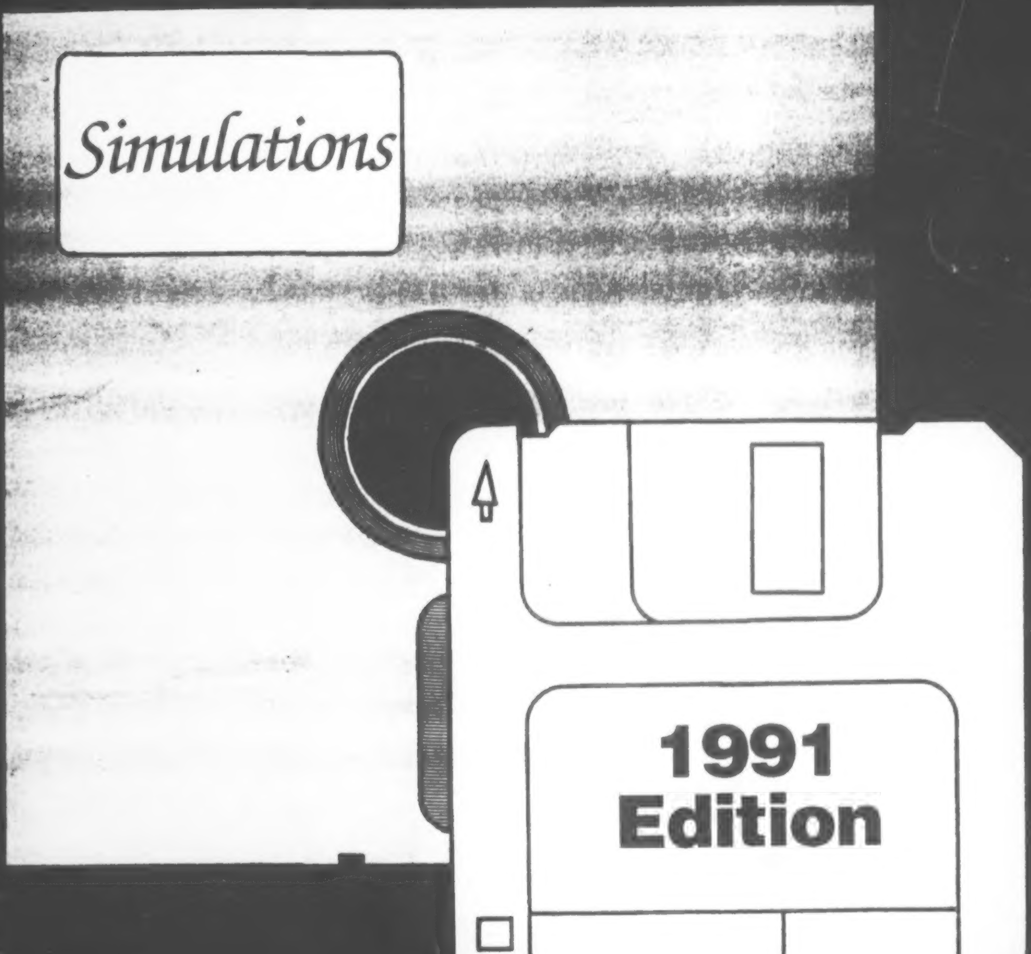
BUSINESS COMPUTER APPLICATIONS I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BUSINESS COMPUTER APPLICATIONS I
SIMULATIONS

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PREFACE

The simulations for the *Business Computer Applications I Curriculum Guide* were prepared to provide quality instructional materials for instructors of Business Computer Applications I courses in Texas.

These simulations have been developed through a joint effort of the Texas Education Agency and the Educational Development and Training Center located on the campus of East Texas State University at Commerce, Texas.

The purpose of developing these simulations is to provide Business Computer Applications I instructors and students with realistic business activities that are coordinated with the *Business Computer Applications I Curriculum Guide*. Suggestions and comments concerning these simulations are requested to be sent to the curriculum specialist at the Educational Development and Training Center.

How to Use Simulation Materials

A simulation has been prepared for most sections of the *Business Computer Applications I Curriculum Guide*. Each simulation is based on working in an office position in a company.

The simulations are versatile and may be used in many different ways. However, they should not be completed until after the conclusion of the section or unit of the guide has been completed. The simulations may serve as a culminating test or as additional activities to tie in all of the concepts taught in the section. They may be used at the end of the semester or school year to review the concepts that have been studied.

If a simulation requires the use of a microcomputer, the simulation may be performed on any type of microcomputer using the software packages of your choice. **It is assumed the students already have a working knowledge of the software packages on which they will be working.** You will need to decide what reference materials will be provided for the students.

Brief instructions and a grading sheet are provided for the teacher at the beginning of each simulation. Most answers are provided. Some simulations do not lend themselves to standard answers; therefore, the teacher must decide what grading standards to use. Clarifications are provided in the instructions or the answers when necessary.

Business Computer Applications I

Word Processing

Simulation

INSTRUCTIONS

This is a simulation prepared for Section II, Units I and II of *Business Computer Applications I Curriculum Guide.* The simulation should be completed after the study of the reference materials in **Section II: Word Processing.** Students should have studied and completed all written work for **Unit I--Concepts of Word Processing and Unit II--Word Processing Applications**. The competency tests following these units should determine whether or not the students are ready for the hands-on simulation.

This simulation requires the use of a computer system. Your students will need access to a computer, a blank disk for data storage, and a word processing software package of your choice. It is assumed that you have spent time to acquaint the students with both the computer and word processing software they will use.

This simulation contains the following word processing activities:

- Saving Formats as Macros or Templates
- Memos
- Form Letters
- Mail Merge
- Addressing Envelopes Using the Preferred Post Office Format
- Minutes of the Meeting

SPECIFIC INSTRUCTIONS

1. Remind the students to use the Office Procedures Manual for this simulation.
2. Document request forms are utilized that provide detailed information about each project. File names may be assigned to each document. Remind students about prioritizing their work.

3. Make sure your students know how to prepare macros or templates before beginning the simulations. If your software does not permit you to do this, have the students save the formats in a file and copy (cut and paste) the format they need into the new document.

4. Set up a format for addressing envelopes using the mail merge feature of your word processor before beginning the simulation. However, if your software or equipment does not support mail merge, have students type the envelopes on a typewriter. Make sure the students use the postal format.

5. An evaluation form has been provided to identify the main emphasis for grading in each project. You may wish to provide two grades, accuracy and production.

Materials Needed:	**Equipment Needed:**
Word processing software	Computer
Proofreader's marks	Printer
Envelopes or duplicate the forms provided	

ANSWERS

Memo Formats Saved Either as Macros or Templates

PSYCHEDELIC WHEELS

MEMO

TO: All Department Heads

FROM: Jesus Escalante

DATE:

SUBJECT:

PSYCHEDELIC WHEELS

MEMO

TO: All Employees

FROM: Jesus Escalante

DATE:

SUBJECT:

PSYCHEDELIC WHEELS

MEMO

TO: Custodial Staff

FROM: Jesus Escalante

DATE:

SUBJECT:

PSYCHEDELIC WHEELS

MEMO

TO: Sales Department

FROM: Jesus Escalante

DATE:

SUBJECT:

PSYCHEDELIC WHEELS

MEMO

TO: Mr. James, Finance Department

FROM: Jesus Escalante

DATE:

SUBJECT:

PSYCHEDELIC WHEELS

MEMO

TO: Mr. Escobar, President

FROM: Mr. Escalante

DATE:

SUBJECT:

Equipment Installation Memo

PSYCHEDELIC WHEELS

MEMO

TO: Mr. James, Finance Department

FROM: Jesus Escalante

DATE: July 25, 19--

SUBJECT: Progress Report

Please come to my office at 3 p.m. today. I need a progress report on the installation of the equipment and programs to track the Organizational Tasks Project.

xx

Department Heads' Memo

PSYCHEDELIC WHEELS

MEMO

TO: All Department Heads

FROM: Jesus Escalante

DATE: July 26, 19--

SUBJECT: Organizational Tasks Project Meeting

A meeting will be held in the Board Room on Friday, July 27, at 3 p.m. to discuss the progress of implementing the Organizational Tasks Project within each department.

Please be prepared to discuss the methods you have used to implement the project within your department and any problems you have encountered.

xx

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Elementary Coordinator
Socorro ISD
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EL PASO TX 79940-9431

ELEMENTARY COORDINATOR
YSLETA ISD
17000 PARKS STREET
EL PASO TX 79929-4659

Envelope Address Format

PSYCHEDELIC WHEELS
3210 Dauphine
El Paso, TX 79930-9736

YWCA CHILD CARE CENTER
2008 GEORGE DIETER AVENUE
EL PASO TX 79930-9732

Memo to President--Edited Copy

DATE: July 03, 19--

SUBJECT: Departmental Reports

SS

¶#'s

A meeting was held with the Department Heads Fri July 12 to determine there progress on setting up the Departmental Organizational Tasks Project. It apears that most depts are on schedule with teh implmentation

The finance Department is experiencing some dificulty with the installation of equipment. Some of the equipment companies have failed to honor their instalation agreements. I have contacted all but one company. Three compan~~ys~~ies have responded and I beleive the equipment will be functional within the next 2 days. The AQD Company has not answered my inqries. I suggest we cancel the order.

The Commercial Artist Mr. Antonio, requested better li gh ting in his studio. Mr. Johnson, Custodail Supervisor, has been requested to look into this matter

Mr. hanks, Inventory Controler, states that the shipments for snake skates, green slim hover boards, King Kong Rider s and Nina Turtle Rider s have not arrived. The compan~~ys~~ies have been contacted and all have assured him of an Aug. 1 delivery.

The outline for the Grand Opening has been distributed too All Department Heads. Many good sugestions have been conveyed to me oraly and I plan to have a meeting on August 2 ~~3~~, at 9 ~~10:00~~ a.m. Please let me know if this date and time are conveneint for you to attend. It can still be changed!

Memo to President--Final Copy

PSYCHEDELIC WHEELS

MEMO

TO: Mr. Escobar, President

FROM: Mr. Escalante

DATE: July 30, 19--

SUBJECT: Departmental Reports

A meeting was held with the department heads Friday, July 27 to determine their progress on setting up the Departmental Organizational Tasks Project. It appears that most departments are on schedule with the implementation.

The Finance Department is experiencing some difficulty with the installation of equipment. Some of the equipment companies have failed to honor their installation agreements. I have contacted all but one company. Three companies have responded and I believe the equipment will be functional within the next two days. The AQD Company has not answered my inquiries. I suggest we cancel the order.

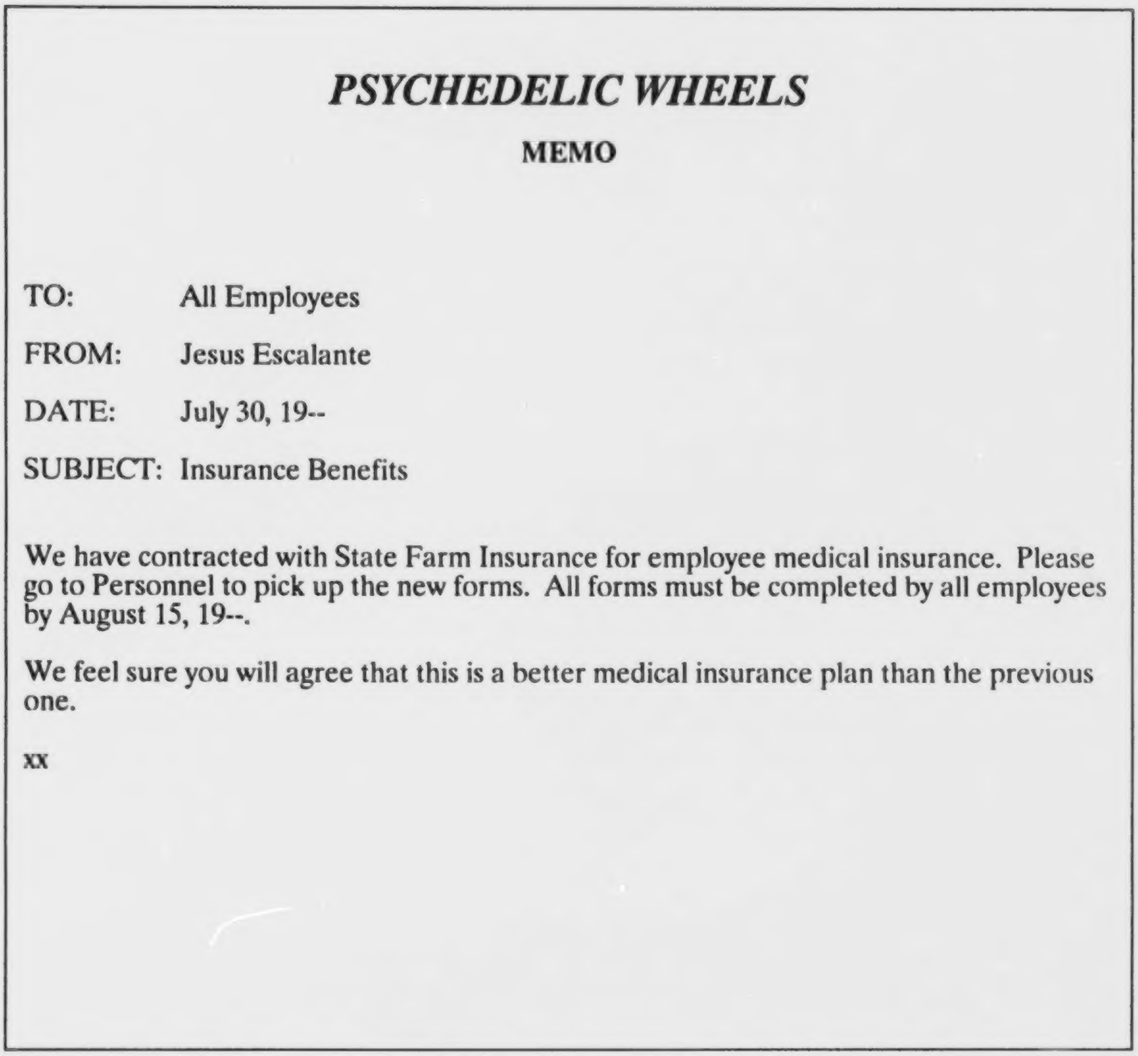
The commercial artist, Mr. Antonio, requested better lighting in his studio. Mr. Johnson, custodial supervisor, has been requested to look into this matter.

Mr. Hanks, inventory controller, states that the shipments for snake skates, green slim hover boards, King Kong Riders and Ninja Turtle Riders have not arrived. The companies have been contacted and all have assured him of an August 1 delivery.

The outline for the Grand Opening has been distributed to all department heads. Many good suggestions have been conveyed to me orally and I plan to have a meeting on August 2, at 9 a.m. Please let me know if this date and time are convenient for you to attend. It can still be changed!

xx

Memo on Insurance Benefits



PSYCHEDELIC WHEELS

MEMO

TO: All Employees

FROM: Jesus Escalante

DATE: July 30, 19--

SUBJECT: Insurance Benefits

We have contracted with State Farm Insurance for employee medical insurance. Please go to Personnel to pick up the new forms. All forms must be completed by all employees by August 15, 19--.

We feel sure you will agree that this is a better medical insurance plan than the previous one.

xx

Grand Opening Finance Memo--Edited Copy

DATE: July 31, 91--

SUBJECT: Financ~~h~~ial Stat*e*ment for the GOP

There will be a meeting in my office Aug. 2 at 9~~:00~~ AM to discuss the progress of the Grand Opening plans Please provide me a br*e*ak~~e~~down on the costs for the plan. You will be asked to~~o~~ make a formal pres~~a~~*e*ntation to the planning commit*t*ee tomorrow at the 10~~:00~~ a.m. meeting in the board room.

783

Grand Opening Finance Memo--Final Copy

PSYCHEDELIC WHEELS

MEMO

TO: Mr. James, Finance Department

FROM: Jesus Escalante

DATE: July 31, 19--

SUBJECT: Financial Statement for the Grand Opening Plans

There will be a meeting in my office August 2 at 9 a.m. to discuss the progress of the Grand Opening plans. Please provide me a breakdown on the costs for the plan. You will be asked to make a formal presentation to the planning committee tomorrow at the 10 a.m. meeting in the board room.

xx

Minutes of the Meeting

PSYCHEDELIC WHEELS

Minutes of the
Grand Opening Planning Meeting
Tuesday, August 3, 19--

Jesus Escalante called the Grand Opening Planning meeting to order at 10 a.m. All department heads were present. Deanna McClure read the minutes of the last meeting.

The department heads indicated that they were on schedule with their part in the Grand Opening. Mr. Collier, Sales Department, brought samples of the flyers to be distributed city wide. He also brought sketches of the banner, posters and other visual advertising materials.

Mr. James, Finance Department, stated that we are within the proposed budget for the Grand Opening. He asked that all expenditure receipts be forwarded to him as soon as possible so that he can keep an up-to-date spreadsheet available for all department heads.

The group decided to set the next meeting date for August 7, 19--.

Ricardo Escobar
Ricardo Escobar

Deana McClure
Deanna McClure

785

EVALUATION SHEET

Date Completed	**Project**	**Grade**
________________	**Request 683: Saving Formats**	_______

Redo Y N
Mailable Y N

_____ Forms Keyed in Correctly
_____ Formats Saved Properly
_____ Sample Printed Out and Labeled with File Name

Comments:

________________	**Request 689: Equipment Installation Memo**	_______

Redo Y N
Mailable Y N

_____ Format Correctly Retrieved
_____ Memo Keyed in Correctly
_____ All Corrections Made
_____ Proper Format
_____ Printed in Good Form
_____ All Copies Printed

Comments:

________________	**Request 693: Memo to Department Heads**	_______

Redo Y N
Mailable Y N

_____ Format Correctly Retrieved
_____ Memo Keyed in Correctly
_____ Edited Correctly
_____ All Corrections Made
_____ Proper Format
_____ Printed in Good Form
_____ All Copies Printed

Comments:

Student Name ____ Class ________________

BCAI/Simulations
Word Processing Evaluation Sheet

Date Completed	Project	Grade

______________ **Request 683: Saving Formats** ______

Redo Y N
Mailable Y N

_____ Forms Keyed in Correctly
_____ Formats Saved Properly
_____ Sample Printed Out and Labeled with File Name

Comments:

______________ **Request 689: Equipment Installation Memo** ______

Redo Y N
Mailable Y N

_____ Format Correctly Retrieved
_____ Memo Keyed in Correctly
_____ All Corrections Made
_____ Proper Format
_____ Printed in Good Form
_____ All Copies Printed

Comments:

______________ **Request 693: Memo to Department Heads** ______

Redo Y N
Mailable Y N

_____ Format Correctly Retrieved
_____ Memo Keyed in Correctly
_____ Edited Correctly
_____ All Corrections Made
_____ Proper Format
_____ Printed in Good Form
_____ All Copies Printed

Comments:

Student Name ______________________________ Class ______________

BCAI/Simulations
Word Processing Evaluation Sheet

Date Completed	**Project**	**Grade**

________________ **Request 700: Form Letter and Envelopes** _______

Redo Y N
Mailable Y N

_____ Letter Keyed in Correctly
_____ Letter in Good Format
_____ Mailing List in Proper Format
_____ Mail Merge Used
_____ Envelopes Properly Addressed

Comments:

________________ **Request 705: Memo on Departmental Report** _______

Redo Y N
Mailable Y N

_____ Format Correctly Retrieved
_____ Memo Keyed in Correctly
_____ All Corrections Made
_____ Proper Format
_____ Printed in Good Form
_____ All Copies Printed

Comments:

________________ **Request 711: Memo on Employee Benefits** _______

Redo Y N
Mailable Y N

_____ Format Correctly Retrieved
_____ Memo Keyed in Correctly
_____ All Corrections Made
_____ Proper Format
_____ Printed in Good Form
_____ All Copies Printed

Comments:

Student Name ____ Class _______________

BCAI/Simulations
Word Processing Evaluation Sheet

Date Completed	Project	Grade
________________	**Request 713: Memo on Grand Opening--Financial**	_______

Redo Y N

Mailable Y N

_____ Format Correctly Retrieved
_____ Memo Keyed in Correctly
_____ All Corrections Made
_____ Proper Format
_____ Printed in Good Form
_____ All Copies Printed

Comments:

________________	**Request 714: Grand Opening Planning Meeting Report**	_______

Redo Y N

Mailable Y N

_____ Formatted Appropriately
_____ Keyed in Correctly
_____ All Corrections Made
_____ Printed in Good Form
_____ All Copies Printed

Comments:

Student Name ____ Class ________________

PSYCHEDELIC WHEELS
3210 Dauphine
El Paso, TX 79930-9736

PSYCHEDELIC WHEELS
3210 Dauphine
El Paso, TX 79930-9736

791

792

PSYCHEDELIC WHEELS

MEMO

PSYCHEDELIC WHEELS

Welcome to *Psychedelic Wheels*!

Congratulations, you have just been hired as an information processing specialist in the Word Processing Department of *Psychedelic Wheels*. Because we are a newly established company, you have the opportunity and challenge of bringing your ideas and expertise to us and incorporating those ideas into our company.

As an information processing specialist, you will be creating letters, memos, reports and other correspondence as needed. Your immediate supervisor is Jesus Escalante, Vice President.

Document Request Forms are used by all departments for all documents that need to be produced. The form provides detailed instructions on how to complete the document. It is expected that all work will be carefully proofread before it is submitted to your immediate supervisor for approval before the documents are sent to the appropriate destination. Attach the Document Request form with the document produced.

Psychedelic Wheels

Document Request Form 683

From the desk of Jesus Escalante, Vice President
Department Administrative Systems
Document Name Memo Formats **File Name** ___
Date Needed Immediately **Store for future use:** [✓ YES] NO

Type of Project

___ Letter ___ Memo ___ Report Memo Format Other

Formatting Instructions Set headings up in memo format using the attached sample.

Printing Instructions

___ Plain Paper ___ Letterhead ✓ Memo Heading ___ Other
1 No. of Copies ___ Final Copy ___ Landscape ___ Portrait

Print a copy of each macro or file. Write the name of the macro code or file name on the top of each memo page.

Special Instructions

Prepare a separate macro or template for each heading set up.

MEMO FORMATS

TO: All Department Heads
FROM: Jesus Escalante
DATE:
SUBJECT:

TO: Sales Department
FROM: Jesus Escalante
DATE:
SUBJECT:

TO: All Employees
FROM: Jesus Escalante
DATE:
SUBJECT:

TO: Mr. James, Finance Department
FROM: Jesus Escalante
DATE:
SUBJECT:

TO: Custodial Staff
FROM: Jesus Escalante
DATE:
SUBJECT:

TO: Mr. Escobar, President
FROM: Mr. Escalante
DATE:
SUBJECT:

Psychedelic Wheels

Document Request Form 689

From the desk of Jesus Escalante, Vice-President
Department Admin. Sys.
Document Name Equipment Installation File Name ____
Date Needed Immediately Store for future use: YES NO

Type of Project

___ Letter ✓ Memo ___ Report ___ Other

Formatting Instructions Use standard memo format.

Retrieve Mr. James memo heading.

Printing Instructions

___ Plain Paper ___ Letterhead ✓ Memo Heading ___ Other
2 No. of Copies ___ Final Copy ___ Landscape ✓ Portrait

Retain one copy for our files and send the other copy to Mr. James.

Special Instructions

Date: July 25, 19--; Subject: ~~Equipment Installation~~ Progress Report

Plise come to my office at 3:00 pm today. I kneed a progress rpt. on the installation of equip + programs to trac the Organizational Tasks Project.

798

Psychedelic Wheels

Document Request Form 693

From the desk of Jesus Escalante
Department Admin. Supr.
Document Name Organizational Tasks **File Name** ____
Date Needed Today **Store for future use:** [✓ YES] NO

Type of Project

___ Letter ✓ Memo ___ Report ____ Other

Formatting Instructions Use standard memo format.

Retrieve the All Department Heads format.

Printing Instructions

___ Plain Paper ___ Letterhead ✓ Memo Heading ___ Other
2 No. of Copies ___ Final Copy ___ Landscape ___ Portrait

Special Instructions

Key in the attached information making the necessary corrections.

Date: July 26, 19--

Subject: Organizational Tasks Project Meeting

[A meeting will be held in the $\overset{a}{\text{b}}$ordroom on Fri. ⊙ July 27, at 3:00 P.M. to discuss the $\overset{\text{progress}}{\text{~~projects~~}}$ of implementing the OTP within each dept. ⊙ ¶ Please be prepared too discus^{s} the methods you have used to impl$\overset{e}{\text{e}}$ment the proj. with‿in you^{r} dept. + any probs. you have $\overset{e}{\text{I}}$ncountered ⊙

800

Psychedelic Wheels

Document Request Form 700

From the desk of J.E.

Department Administrative Systems

Document Name Finance of Grand Opening -File Name ____

Date Needed ASAP Store for future use: YES NO

Type of Project

✓ Letter ____ Memo ____ Report ____ Other

Formatting Instructions Use standard letter style.

Printing Instructions

____ Plain Paper ✓ Letterhead ____ Memo Heading ____ Other

1 No. of Copies ____ Final Copy ____ Landscape ____ Portrait

Merge inside addresses with form letters.

Special Instructions

Key in corrected letter and inside addresses. Set them up to merge. Reformat addresses in the postal format and save in a separate file. Set up envelope format. Merge addresses with envelope format.

801

(Current Date)

(Inside Address)

Dear Patron

Bold Bold

We are proud to announce the Grand Opening of our store, Psychedelic Wheels Sat, Aug. 18, 19--. Our galla event will feture the newist designs of Fun on Wheels". Have you ever had a ride on a Rinoceros on Wheels?

A special area on the parking lot has been roped off for demonstration rides to our new lines of "wheels". A stunts on wheels performance will take place at 2;00 p.m. featuring the Psychomaniacs.

Please accept this personnel invitation to come and help us celabrate our Grand Opening.

Sincerly

Jesus Escalante
V. P

xx

802

Addresses

Ywca Child Care Center
2008 George Dieter Avenue
El Paso TX 79930-5432

caps

City of Elpaso
Parks & Rec. Serv.
29800 Alameda Boulevard
El Paso ~~Texas~~ TX 79925-6245

Elementary Coord.
El Paso ISD
2900 Gateway W.
El Paso TX 79937-9901

Elementary Coordinator
Socorro ISD
12300 E. Lake Dr.
El Paso Tx 79927-8760

Cheryl's Day Care Center
56780 Lee Trevino
El Paso TX 79935-3219

Jesus Garcia
12835 Montana
El Paso TX 79940-9431

Ele. Coordinator
Ysleta ISD
17000 Parks St.
El Paso TX 79929-4659

Psychedelic Wheels

Document Request Form 705

From the desk of Jesus
Department Admin. Sys.
Document Name Departmental Report File Name ____
Date Needed Tomorrow Store for future use: [✓ YES] NO

Type of Project

____ Letter ✓ Memo ____ Report ____ Other

Formatting Instructions Use standard memo format.
Retrieve Mr. Escobar memo format.

Printing Instructions

____ Plain Paper ____ Letterhead ✓ Memo Heading ____ Other
2 No. of Copies ____ Final Copy ____ Landscape ____ Portrait

Special Instructions

Key in attached information in memo format after you have edited it.

DATE: July 03, 19--

SUBJECT: Departmental Reports

A meeting was held with the Department Heads Fri. July 72 to determine there progress on setting up the Departmental Organizational Tasks Project. It apears that most depts. are on schedule with teh implimentation

The finance Department is experiencing some dificulty with the installation of equipment. Some of the equipment companies have failed to honor their instalation agreements. I have contacted all but one company. Three companys have responded and I beleive the equipment will be functional within the next 2 days. The AQD Company has not answered my inquries. I suggest we cancel the order.

The Commercial Artist Mr. Antonio, requested better liting in his studio. Mr. Johnson, Custodail Supervisor, has been requested to look into this matter

Mr. hanks, Inventory Controler, states that the shipments for snake skates, green slim hover boards, King Kong Rider and Nina Turtle Rider have not arrived. The companys have been contacted and all have assured him of an Aug. 1 delivery.

The outline for the Grand Opening has been distributed too All Department Heads. Many good sugestions have been conveyed to me oraly and I plan to have a meeting on August 3, at 10:00 a.m. Please let me know if this date and time are conveneint for you to attend. It can still be changed!

Psychedelic Wheels

Document Request Form 711

From the desk of Mr. Escalante
Department Administrative Systems
Document Name Insurance Benefits File Name ____
Date Needed ASAP Store for future use: [✓ YES] NO

Type of Project

____ Letter ✓ Memo ____ Report ____ Other

Formatting Instructions Use standard memo format.

Retrieve memo heading format for:
All Employees

Printing Instructions

____ Plain Paper ____ Letterhead ✓ Memo Heading ____ Other

5 No. of Copies ____ Final Copy ____ Landscape ____ Portrait

Print one copy and make four extra copies, one for each department.

Special Instructions

Key in attached information and make corrections.

Determine the subject.

July 30, 19--

Subject:

We have contracted @ St. Farm Ins. for employee med. ins. Please go to Person~~al~~nel to pick up the new forms. All forms must be completed by all employees by Aug. 15, 19--.

[We feel sure you will agree that this is a better medical insurance plan than we had before.

807

Psychedelic Wheels

Document Request Form 713

From the desk of J. E.

Department Admin. Sup.

Document Name Finance Grand Opening **File Name** ___

Date Needed July 31, 19-- **Store for future use:** [✓ YES] NO

Type of Project

___ Letter ✓ Memo ___ Report ___ Other

Formatting Instructions Use standard memo format.

Retrieve the memo heading format for: Mr. James

Printing Instructions

___ Plain Paper ___ Letterhead ✓ Memo Heading ___ Other

2 No. of Copies ___ Final Copy ___ Landscape ___ Portrait

Special Instructions

Edit the information and key in the memo.

DATE: July 31, 91--

SUBJECT: Financhal Statment for the GOP.

There will be a meeting in my office Aug. 2 at 9:00 AM to discuss the progress of the Grand Opening plans Please provide me a brakedown on the costs for the plan. You will be asked too make a formal presantation to the planning commitee tomorrow at the 10:00 a.m. meeting in the boardroom.

Psychedelic Wheels

Document Request Form 714

From the desk of Jesus Escalante, V.P.
Department Administrative Systems
Document Name Minutes--Aug. 3 File Name ____________
Date Needed ASAP Store for future use: [✓ YES] NO

Type of Project

___ Letter ___ Memo ✓ Report ____________ Other

Formatting Instructions Use format for minutes in the Office Procedures Manual.

Printing Instructions

✓ Plain Paper ___ Letterhead ___ Memo Heading ___ Other
2 No. of Copies ___ Final Copy ___ Landscape ___ Portrait

Special Instructions

Key in attached information, making all corrections.

PSYCHEDELIC WHEELS

Minutes of the Grand Opening Planning Meeting Tuesday, August 3, 19-- → Center using 3 lines

Jesus ~~Mr.~~ Escalante called the Grand Opening Planning meeting to order at 10 a.m. All Department Heads were present. Deanna McClure read the minutes of the last meeting.

The department heads indicated that they were on schedule with their part in the Grand Opening. Mr. Collier, Sales Department, brought samples of the fliers to be distributed citywide. He also brought sketches of the banner, posters and other visual advertising materials.

Mr. James ~~Black~~, Finance Department, stated that we are within the purposed budget for the Grand Opening. He asked that all expenditure receipts be forwarded to him as soon as possible so that he can keep an up to date spreadsheet available for all Department Heads.

↓#3

Ricardo Escobar

3 #'s

Deanna McClure

5 Space

The group decided to set the next meeting date for August 7, 19--.

811

Business Computer Applications I

Database

Simulation

INSTRUCTIONS

This is a simulation prepared for Section IV, Units I and II of the *Business Computer Applications I Curriculum Guide*. The simulation should be completed after the study of the reference materials in **Section IV: Database Management**. Students should have studied and completed all written work for **Unit I--Concepts of Database Management and Unit II--Database Management Applications**. The competency tests following these units should determine if the students are ready for the hands-on simulation.

Your students will need access to a microcomputer, a blank disk for data storage, and a database software package of your choice. It is assumed that you have spent time to acquaint the students with both the computer and database software that they will use.

This simulation contains the following database activities:

- Create a database
- Print using field names and report format
- Adding and deleting records
- Printing specific aspects of the database
- Printing in ascending and descending order
- Printing on labels and rolodex cards
- Integrating database document into word processing document
- Saving and making backup copies
- Creating a password

SPECIFIC INSTRUCTIONS

1. You may wish to assign due dates on the projects. You may consider writing a memo to the students as if you were their supervisor and provide them with a listing of due dates.

2. You may also wish to provide students with a listing of file names so everyone would use the same one. If this is the case, use the memo discussed above to assign the names.

3. The students have been asked to add records for at least two more groups. They can make up the rest of the information about the groups. Their individual records will vary. Also, note that the field names are given as a suggestion only. This should be taken into consideration when grading the print out.

4. Because a variety of database programs are available, your software may not have the capability to perform some of the applications. You may need to modify some of the instructions.

5. Do not allow the students to omit the backup procedures. Later activities will utilize the backup.

6. Note: It is assumed, in this simulation, that you have already taught units on viruses and on how to make backups of diskettes. If you happen to have any software for viruses such as "Vaccine", let your imagination be your guide in the teaching of this important ethical situation. Have students use their backup file after this happens.

9. You might want to use the label templates and rolodex cards found after the evaluation , design your own, or use the real thing.

10. To perform the application for the finding of percentage of singers requiring less than $100,000, divide the total number of groups in your files into the total number earning less than $100,000 minimum. If your database program does not calculate percentages, encourage the students to use calculators.

11. The Database Project Request Sheet simulates a "work order" in the business world. It could serve as a check sheet for you and the student. Note the place at the bottom designed for you to "approve" or to give assignment back to student to redo.

12. Have each student bring an envelope or you may furnish them with one in which to place their password.

13. Suggested grading for each application could be: a letter grade, mailable or unmailable, correctable status. You might choose to have students repeat assignments until they are acceptable.

Materials Needed:	**Equipment Needed:**
Database software	Computer Printer

ANSWERS

Answers evaluated to the satisfaction of the instructor.

EVALUATION SHEET

Date Completed	Project	Grade
____________	**Project 101: Creation of Database**	______
Redo Y N Mailable Y N	____ Proofread ____ Two Groups Added ____ Printed with Field Names ____ Solved and Backup Indicated Performed ____ Form Completed	
Comments:		
____________	**Project 102: Printout Grouped by Agent**	______
Redo Y N Mailable Y N	____ Used Report Format ____ Headings and Column Heading Correct ____ Form completed	
Comments:		
____________	**Project 103: Search and Print**	______
Redo Y N Mailable Y N	____ Format Correct ____ Headings and Column heading Correct ____ Only Requested Groups Printed ____ Form Complete	
Comments:		

Student Name ______________________ Class ____________

816

BCAI/Simulations
Database Evaluation Sheet

Date Completed	Project	Grade
________	**Project 104: Address Labels**	______

Redo Y N
Mailable Y N

_____ Prepared in Descending Order
_____ Aligned Properly
_____ Form Completed

Comments:

Date Completed	Project	Grade
________	**Project 105: Changing the Records**	______

Redo Y N
Mailable Y N

_____ Change in Records were Made
_____ Correct Headings Used
_____ Arranged Correctly on Page
_____ Form Completed

Comments:

Date Completed	Project	Grade
________	**Project 106: Selective Printing in Descending Order**	______

Redo Y N
Mailable Y N

_____ Records Selected Correctly
_____ Records Printed in Descending Order
_____ Form Completed
_____ Password Assigned
_____ Legal Name Used for Password
_____ Envelope Prepared Correctly

Comments:

Student Name 817 Class ______________

Date Completed	Project	Grade

______________ **Project 107: Integration** ______

Redo Y N
Mailable Y N

____ Memo Keyed in Correctly
____ Integration Completed Correctly
____ Form Completed

Comments:

______________ **Project 108: Delete Record** ______

Redo Y N
Mailable Y N

____ Record Deleted
____ Print Out With Field Names
____ Form Completed

Comments:

______________ **Project 109: Printing Rolodex Cards** ______

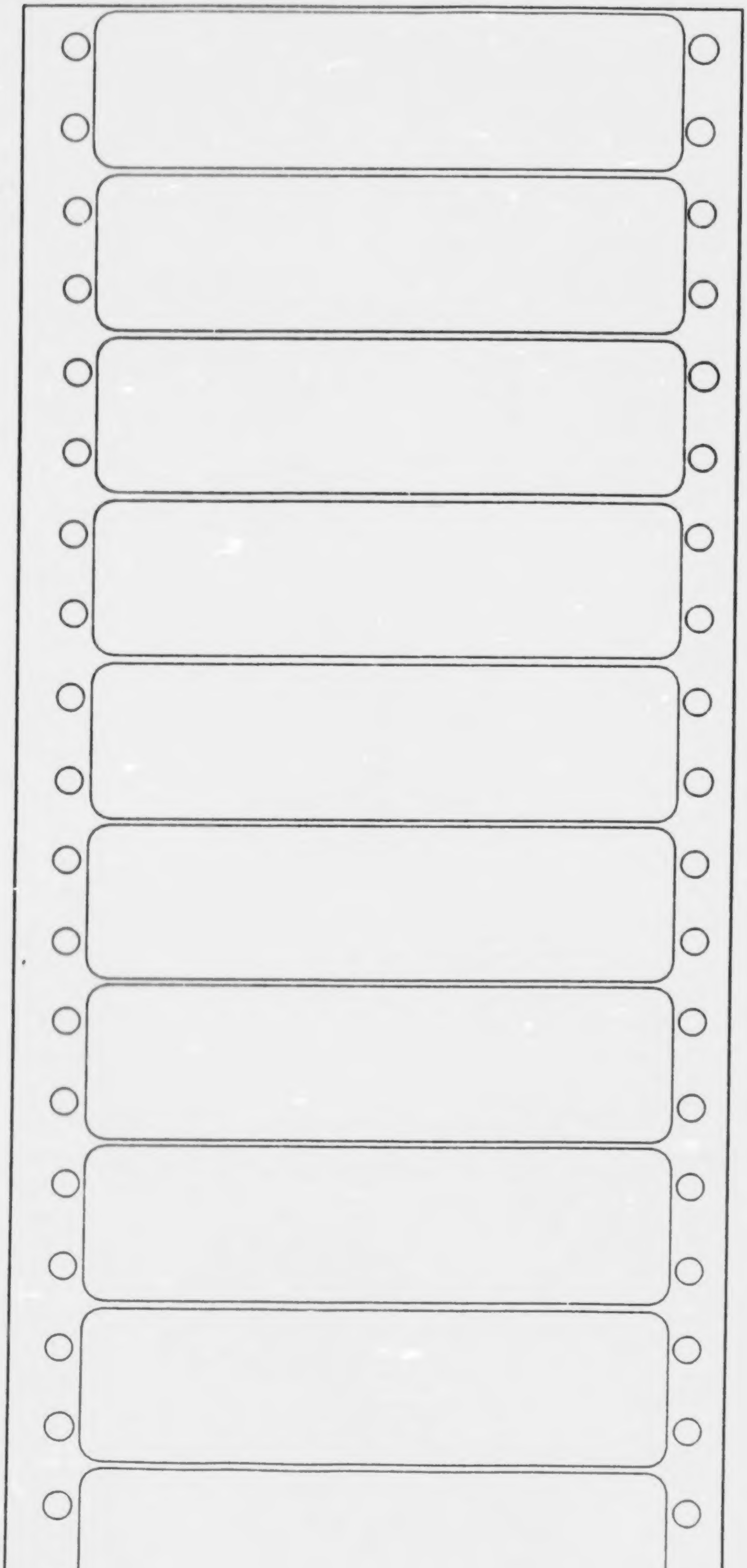
Redo Y N
Mailable Y N

____ Aligned Correctly
____ 2 Copies Printed
____ Form Completed

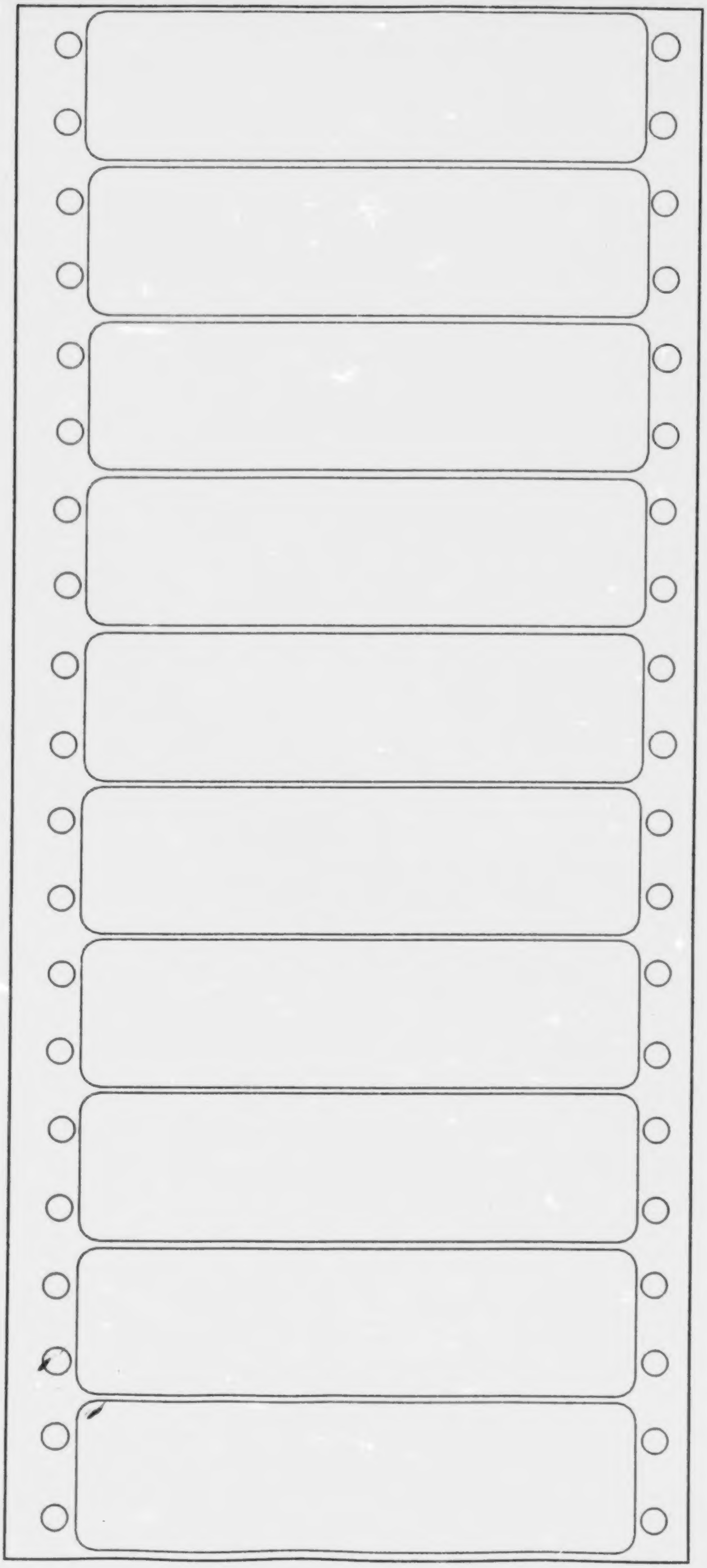
Comments:

Student Name ______________________________ Class ______________

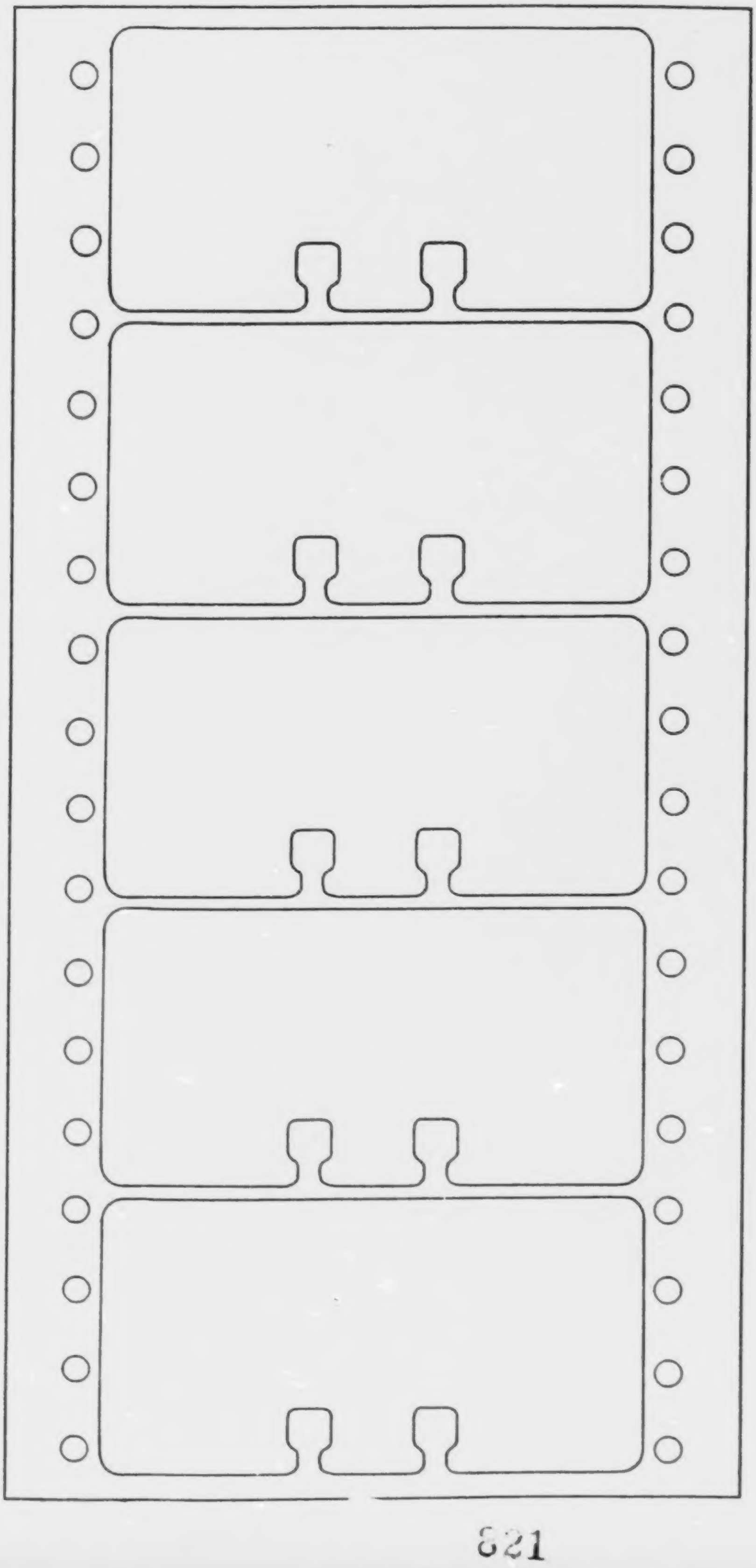
Mailing Labels



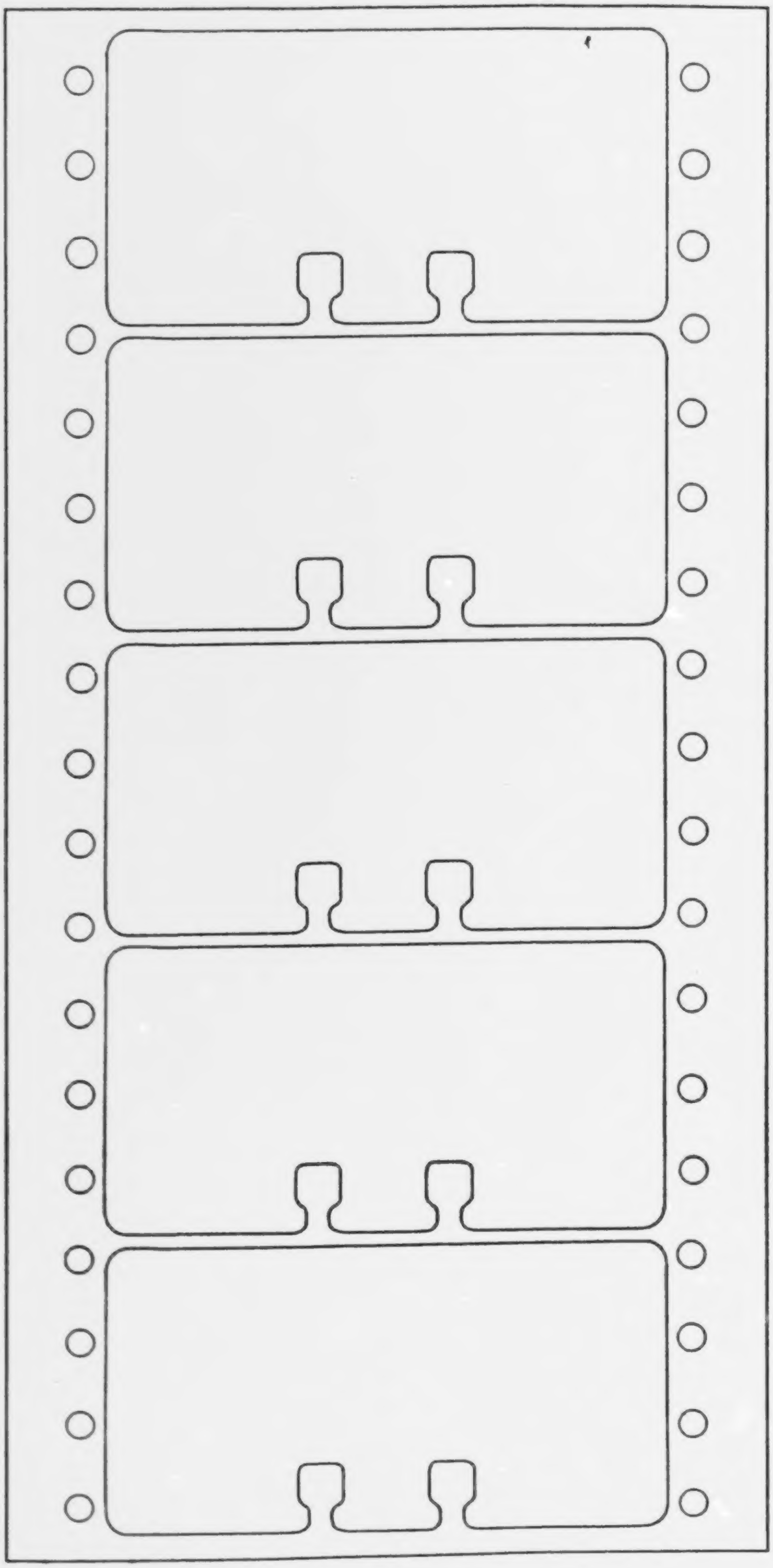
Mailing Labels



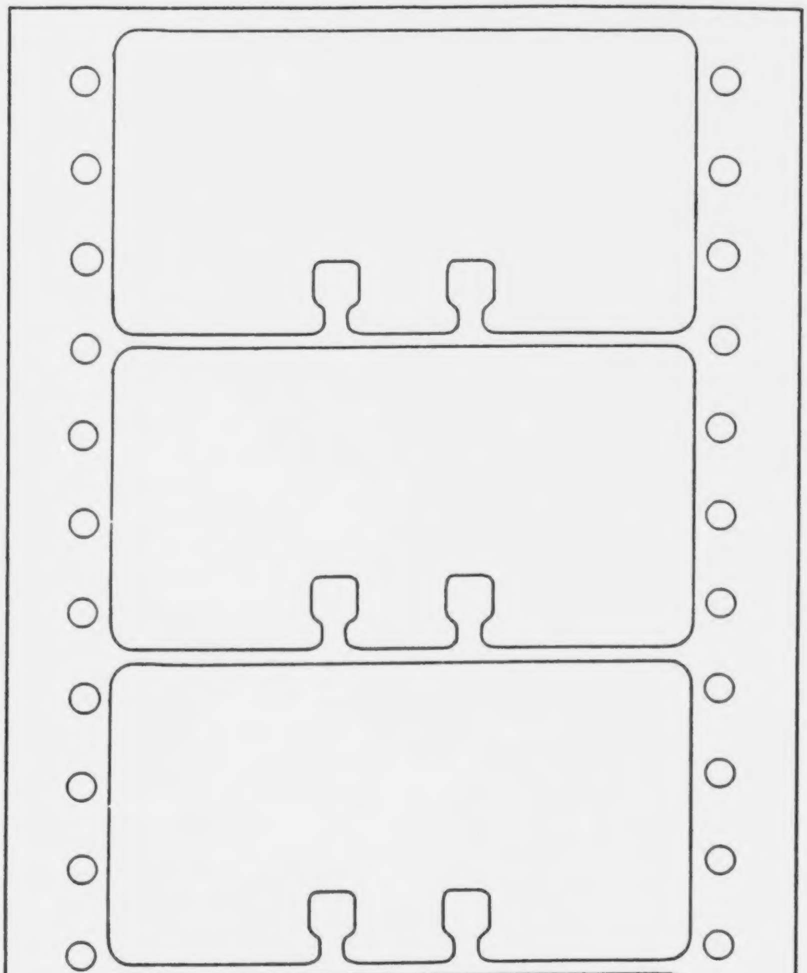
Rolodex Cards



Rolodex Cards



Rolodex Cards



ENTERTAINMENT SENSATIONS

Welcome to Entertainment Sensations, Inc.

Entertainment Sensations is a booking agency for rock-singing entertainers. The company maintains a database that contains records of our clients. The information is available to those who are interested in booking any of the groups for concerts. You have just been hired as the booking agent for ESI.

Your responsibility as an entertainment booking agent is to create and maintain a database of the rock singing groups who are registered with your company. It will be your responsibility to recruit new groups, and you will--from time to time--need to contact them by telephone and/or by mail for recruitment purposes. Your primary responsibility is to supply information about the singers (from information in the database) to anyone interested in them.

Database Project Request Form

Database: Singer/Group **Project No.:** 101

Employee Name: ______ **Due Date:** ______

Authorized By: Mike Manager **Store for Future Use:** ✓

Creation: ✓ **Maintenance:** ______ **Backup Time:** ______ **File Name:** ______

[✓ Field Names]/Maintenance Procedures:

1.	Singer/Group	30	Alphanumeric
2.	Agent	20	Alphanumeric
3.	Address	30	Alphanumeric
4.	City	12	Alphanumeric
5.	State	2	Alphanumeric
6.	Zip	9	Numeric
7.	Telephone	10	Alphanumeric
8.	Number in Group	2	Numeric
9.	Box Office Number	7	Numeric

Sorting Instructions: Ascending: ✓ Descending: ______ By: Singer/Group

Printing Instructions: 1 Copies ______ Report Format Print Field Names: [✓ Y] N

Paper: 1 Plain ______ Labels ______ Rolodex Cards ______ Other ______

Special Instructions: Enter data for the Singer/Group. Add two more Singer/Groups to the list. Print a copy.

Submitted for Approval: ______ Supervisor's Initials ______ Final Approval

Record #1

Name of Singer/Group:	Janet Jackson
Name of Agent:	Image Incorporated
Telephone No. of Agent:	(213) 497-4000
Address:	1255 Wilshire Boulevard
City:	Los Angeles
State:	California
ZIP:	90010-0762
Number in Group:	6
Box Office Minimum:	125,000
Other Special Information:	Booked for two years in advance

Record #2

Name of Singer/Group:	Paula Abdoul
Name of Agent:	Sun City Promotions
Telephone No. of Agent:	(408) 954-7901
Address:	836 Anacapa Street
City:	Santa Barbara
State:	California
ZIP:	93101-7583
Number in Group:	3
Box Office Minimum:	90,000
Other Special Information:	Booked for 10 months in advance

Record #3

Name of Singer/Group:	New Kids on the Block
Name of Agent:	New Visions
Telephone No. of Agent:	(716) 355-7097
Address:	311 Alexander Kileen
City:	Rochester
State:	New York
ZIP:	14604-9747
Number in Group:	8
Box Office Minimum:	95,000
Other Special Information:	Booked for 8 months in advance

Record #4

Name of Singer/Group:	Michael Jackson
Name of Agent:	American Billboards
Telephone No. of Agent:	(213) 692-4983
Address:	29800 Whiteworth Drive
City:	Los Angeles
State:	California
ZIP:	90035-2815
Number in Group:	3
Box Office Minimum:	150,000
Other Special Information:	Booked for 2 years in advance

Record #5

Name of Singer/Group:	Madonna
Name of Agent:	Image Incorporated
Telephone No. of Agent:	(213) 497-4000
Address:	1255 Wilshire Boulevard
City:	Los Angeles
State:	California
ZIP:	90010-0762
Number in Group:	5
Box Office Minimum:	200,000
Other Special Information:	Booked for 20 months in advance

Record #6

Name of Singer/Group:	Taylor Dane
Name of Agent:	Entertainer's Heights
Telephone No. of Agent:	(216) 835-3720
Address:	1836 Euclid Ave.
City:	Cleveland
State:	Ohio
ZIP:	44115-0425
Number in Group:	3
Box Office Minimum:	65,000
Other Special Information:	Booked for 6 months in advance

Record #7

Name of Singer/Group:	L. L. Cool J.
Name of Agent:	Management Arts
Telephone No. of Agent:	(202) 567-9272
Address:	1516 Saint George Ave.
City:	Fort Wayne
State:	Indiana
ZIP:	46816-1273
Number in Group:	5
Box Office Minimum:	50,000
Other Special Information:	

Record #8

Name of Singer/Group:	Tina Turner
Name of Agent:	Creative Imagery
Telephone No. of Agent:	(213) 692-3733
Address:	3305 Belair Boulevard
City:	Beverly Hills
State:	California
ZIP:	90212-3390
Number in Group:	3
Box Office Minimum:	80,000
Other Special Information:	Booked for 7 months in advance

Entertainment Sensations, Inc. **ENTERTAINER DATA SHEET**

Name of Singer/Group

Name of Agent Telephone No.

Address City State ZIP

Number in Group ______________ Box Office Minimum ___________ Trans. to DB by ___________

Other Special Information

Entertainment Sensations, Inc. **ENTERTAINER DATA SHEET**

Name of Singer/Group

Name of Agent Telephone No.

Address City State ZIP

Number in Group ______________ Box Office Minimum ___________ Trans. to DB by ___________

Other Special Information

Entertainment Sensations, Inc. **ENTERTAINER DATA SHEET**

Name of Singer/Group

Name of Agent Telephone No.

Address City State ZIP

Number in Group ______________ Box Office Minimum ___________ Trans. to DB by ___________

Other Special Information

Database Project Request Form

Database: Singer/Group Project No.: 102

Employee Name: ______ Due Date: ______

Authorized By: Mike Manager Store for Future Use: ✓

Creation: ______ Maintenance: ✓ Backup Time: ______ File Name: ______

Field Names/Maintenance Procedures:

1. Title lines: Entertainment Sensations
2. Agent/Group Listings
3. Fields: Agent, Singer/Group
4. ______
5. ______
6. ______
7. ______
8. ______
9. ______

Sorting Instructions: Ascending: ✓ Descending: ______ By: Agent

Printing Instructions: 1 Copies ✓ Report Format Print Field Names: Y [✓ N]

Paper: ✓ Plain ______ Labels ______ Rolodex Cards ______ Other ______

Special Instructions: ______

Submitted for Approval: ______ Supervisor's Initials ______ Final Approval

Database Project Request Form

Database: Singer/Group **Project No.:** 103

Employee Name: ______ **Due Date:** ______

Authorized By: Mike Managers **Store for Future Use:** ✓

Creation: ______ **Maintenance:** ______ **Backup Time:** ✓ **File Name:** ______

[✓ Field Names]/Maintenance Procedures:

1.
2. Singer/Group • Number in Group Box Office Maximum
3.
4. Title: Singer/Groups
5. (less than four members)
6.
7.
8.
9.

Sorting Instructions: Ascending: ✓ Descending: ______ By: Number in Group

Printing Instructions: 1 Copies ✓ Report Format Print Field Names: Y [✓ N]

Paper: ____Plain ______Labels ______Rolodex Cards _____Other______

Special Instructions: Print only those records with less than four members.

Submitted for Approval: ____________Supervisor's Initials ____________Final Approval

Database Project Request Form

Database: Singer/Group Project No.: 104

Employee Name: ______________ Due Date: ______

Authorized By: Tillie Secretary Store for Future Use: ______

Creation: ____ Maintenance: ✓ Backup Time: ____ File Name: ______

Field Names/Maintenance Procedures:

1. ______________
2. ______________
3. ______________
4. ______________
5. ______________
6. ______________
7. ______________
8. ______________
9. ______________

Sorting Instructions: Ascending: ____ Descending: ✓ By: ZIP

Printing Instructions: 1 Copies ____ Report Format Print Field Names: Y N

Paper: ____Plain ✓ Labels ____Rolodex Cards ____Other______

Special Instructions: Use address label template to print address labels.

Submitted for Approval: ______Supervisor's Initials ______Final Approval

ENTERTAINMENT SENSATIONS, INC.
MEMO

TO: All Employees

FROM: Eddy Entertainment, President

DATE: Current Date

SUBJECT: Security

We had a break-in some time during the night. It appears someone has attempted to tamper with our computers.

After meeting with the data security firm, we have concluded that all data need to be secured by using passwords. Create your own password and immediately key it into the software you are using. Refer to the manual that accompanied your software and computer system or ask your supervisor for help.

Oh, yes, please keep a copy of your password in a secure place so that authorized personnel can have access. Provide the password in a sealed envelope to Tillie. Make sure your name is on the outside of the envelope.

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Database Project Request Form

Database: Singer/Group **Project No.:** 105

Employee Name: ______ **Due Date:** ______

Authorized By: Mike Manager **Store for Future Use:** ✓

Creation: ______ **Maintenance:** ✓ **Backup Time:** ______ **File Name:** ______

Field Names/[✓ Maintenance] Procedures:

1.
2. Change Madonna's Agent's number to:
3. (213) 429-2446
4.
5. Change Michael Jackson's Agent's number
6. to: (915) 859-3235
7. Fields: Agent No. in Box Office
8. Singer/Group Address Telephone Group Minimum
9.

Sorting Instructions: Ascending: ✓ Descending: ______ By: Singer/Group

Printing Instructions: 1 Copies ✓ Report Format Print Field Names: Y [✓ N]

Paper: ✓ Plain ______ Labels ______ Rolodex Cards ______ Other ______

Special Instructions: Make the changes indicated and proofread files. Make any needed corrections. Reprint using compressed print or by using a sideways printing program or utility.

Submitted for Approval: ______ Supervisor's Initials ______ Final Approval

Database Project Request Form

Database: Singer/Group Project No.: 106

Employee Name: ________ Due Date: ________

Authorized By: Eddy Entertainment Store for Future Use: ✓

Creation: ____ Maintenance: ✓ Backup Time: ____ File Name: ________

Field Names/Maintenance Procedures:

1.
2.
3.
4.
5.
6.
7.
8.
9.

Sorting Instructions: Ascending: ____ Descending: ✓ By: Box Office Minimum

Printing Instructions: 1 Copies ✓ Report Format Print Field Names: Y [✓ N]

Paper: ✓ Plain ____ Labels ____ Rolodex Cards ____ Other ________

Special Instructions:

Print only those groups requiring less than a $100,000 minimum.

Submitted for Approval: ________ Supervisor's Initials ________ Final Approval

NEWS RELEASE

MADONNA QUITS SHOWBIZ

She has reconfirmed her faith and is entering the nunnery.

# # #

Database Project Request Form

Database: Singer/Group Project No.: 107

Employee Name: ________ Due Date: ________

Authorized By: Mike Manager Store for Future Use: ________

Creation: ____ Maintenance: ✓ Backup Time: ____ File Name: ________

Field Names/Maintenance Procedures:

1.
2. Delete Madonna's record from the
3. file.
4.
5. Use fields used in Project 105.
6.
7.
8.
9.

Sorting Instructions: Ascending: ✓ Descending: ____ By: Singer/Group

Printing Instructions: 1 Copies ____ Report Format Print Field Names: Y N

Paper: ✓ Plain ____ Labels ____ Rolodex Cards ____ Other ________

Special Instructions:

Use printing instructions for
Project 105.

Submitted for Approval: ________ Supervisor's Initials ________ Final Approval

You have not worked on your computer for a few hours and now when you load your database -- to your horror -- part of it is missing. You are quite sure that you had saved that portion the day before! What do you do???? You might try to "reboot". However, after you have tried this, the database is doing even more "weird" things.

After you notify your supervisor and explain what is going on, it is not long until it is discovered that there is a virus in your system! Your boss is going to be very upset with you if you have lost some information. Are you in trouble? Think about it! Remember, you made a backup copy of your work not too long ago. Thank goodness! Now part of your problem is solved, because all you have to do now is to use that copy and to make a couple of quick revisions (not on the backup) and you have "saved" the day. That should prove to you just how valuable those backup copies can be!

Now, how about the rest of the problem? How do you get rid of the virus? The virus was probably put into your machine by a diskette that had the "infected" code on it. Fortunately, the "vaccine" that was installed on your hard drive a couple of months ago has begun to work and has "cured" your problem.

Wow! All of this virus business is sort of scary, isn't it? It's not too much fun when someone tampers with your information!

Thank goodness for that backup!!!! Make those frequently!

Database Project Request Form

Database: Singer/Group **Project No.:** 108

Employee Name: ____________ **Due Date:** ______

Authorized By: Eddy Entertainment **Store for Future Use:** ✓

Creation: ✓ **Maintenance:** ____ **Backup Time:** ____ **File Name:** ______

[✓ Field Names]/Maintenance Procedures:

1.
2. Singer/Group
3. Number in Group
4. City
5.
6.
7.
8.
9.

Sorting Instructions: Ascending: ✓ Descending: ____ By: Singer/Group

Printing Instructions: 1 Copies ✓ Report Format Print Field Names: Y [✓ N]

Paper: ____Plain ____Labels ____Rolodex Cards ✓ Other______

Special Instructions: Key in the memo to the Board of Directors. Integrate the report within the memo.

Submitted for Approval: __________Supervisor's Initials __________Final Approval

TO: Board of Directors

FROM: Eddy Entertainment

DATE: Current Date

SUBJECT: Client Update

We are proud to inform you that we have signed up two more groups/singers to our current client list. The complete list is:

(Insert Table Here)

We are currently negotiating with several other groups. We will update you as soon as those groups sign with us.

jp

Database Project Request Form

Database: Singer/Group Project No.: 109

Employee Name: ____________ Due Date: ____________

Authorized By: Tillie Secretary Store for Future Use: ____________

Creation: ______ Maintenance: ✓ Backup Time: ______ File Name: ____________

Field Names/Maintenance Procedures:

1. ____________
2. ____________
3. ____________
4. ____________
5. ____________
6. ____________
7. ____________
8. ____________
9. ____________

Sorting Instructions: Ascending: ✓ Descending: ______ By: Singer/Group

Printing Instructions: 2 Copies ______ Report Format Print Field Names: Y N

Paper: ____Plain ______Labels ✓ Rolodex Cards _____Other____________

Special Instructions: ____________

Submitted for Approval: ____________Supervisor's Initials ____________Final Approval

Business Computer Applications I

Spreadsheet

Simulation

INSTRUCTIONS

This is a simulation prepared for Section III, Units I and II of the *Business Computer Applications I Curriculum Guide*. The simulation should be completed after the study of the reference materials in **Section III: Electronic Spreadsheets**. Students should have studied and completed all written work for **Unit I--Concepts of Electronic Spreadsheets and Unit II--Electronic Spreadsheet Applications**. The competency tests following these units should determine whether or not the students are ready for the hands-on simulation.

Your students will need access to a microcomputer, a blank disk for data storage, and a spreadsheet software package of your choice. It is assumed that you have spent time to acquaint the students with both the computer and spreadsheet software that they will use.

This simulation contains the following spreadsheet activities:

- Calculate net income for each branch office and the entire company.
- Project an increase of 10% in sales and expenses for the next five years.
- Create a bar graph and line graph.
- Catch the crook.

SPECIFIC INSTRUCTIONS

1. This simulation is designed for the students to work in groups. Since there is some analytical work involved, it is best to have a stronger student in each group.
2. The entire simulation revolves around the students "solving the mystery" by analyzing the figures for the Downtown Branch. The simulation states (in the procedures manual) that salaries cannot exceed 30% of the rental income. In the Downtown Branch, the salaries are 50.44% of rental income. So to make the simulation work, the salaries for the Downtown Branch must be lowered to $90,800. If the salary figure for the Downtown Branch is not lowered, the graphs will not work (cannot graph a negative number) and the Downtown Branch will not show a profit--it will show a net loss.

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3. If you want the simulation to be used as an individual project, change the salary figure for the Downtown Branch to $90,800, then there is no "mystery" to solve.

4. Depending on the software you use, you may only be able to graph four of the banks. In this case, have the students delete the figures for the Freedom Mall branch.

5. Please be sure to remind the students to save the graphs they create, otherwise they may have to recreate them.

6. If you need an optional project for the students, have them calculate a break even point (see procedures manual) and estimated profit for video tapes, based on a cost of $20 per tape and rentals of $.99, $1.49, $2.49, and $2.99. Assume that the tapes will be rented five times a week.

Materials Needed:	**Equipment Needed:**
Spreadsheet software	Computer Printer

ANSWERS

Net Income Spreadsheet

Video Masters, Inc.

INCOME STATEMENT

December 31, 19--

	Freedom Mall	Lago Vista Mall	Spring Branch Mall	North Park Mall	Downtown Branch
Income:					
Rental Income	178,600	89,345	123,456	198,540	225,000
Late Charges	3,000	1,938	2,310	5,320	6,500
VCR rental	8,000	4,560	6,650	9,200	19,800
Total Income	**189,600**	**95,843**	**132,416**	**213,060**	**251,300**
Expenses:					
Salaries	38,642	21,346	27,458	77,610	90,800**
Rent	24,000	18,000	19,800	36,000	54,000
Utilities	6,000	4,800	5,400	7,200	12,000
Cost of Goods Sold	40,000	31,642	35,600	78,000	65,000
Repairs	7,500	3,688	4,321	5,150	15,000
Total Expenses	**116,142**	**79,476**	**92,579**	**203,960**	**236,800**
Net Income	**73,458**	**16,367**	**39,837**	**9,100**	**14,500**

Net income for company is: $153,262.

** The salaries should be lowered for the Downtown Branch to make the simulation work. (This is the key to the simulation.) Otherwise, the net income will be a negative $8,200 or a net loss.

NOTE: Student's format of this document may vary from the above table, however, their information should be the same. If the students wish, they may include a sixth column to consolidate the figures for all of the branches, with the heading "Company Totals" or a similar heading.

Printout of Formulas (Using Lotus 1-2-3)

```
D1:   [W12] 'VIDEO MASTERS, INC.
D2:   [W12] 'INCOME STATEMENT
D3:   [W12] 'DECEMBER 31, 19XX
C6:   [W12] ^Freedom
D6:   [W12] ^Lago
E6:   [W12] ^Spring
F6:   [W12] ^North
G6:   [W12] ^Downtown
C7:   [W12] ^Mall
D7:   [W12] ^Vista Mall
E7:   [W12] ^Branch Mall
F7:   [W12] ^Park Mall
G7:   [W12] ^Branch
A9:   [W15] 'Income:
A11:  [W15] 'Rental Income
C11:  (,0) [W12] 178600
D11:  (,0) [W12] 89345
E11:  (,0) [W12] 123456
F11:  (,0) [W12] 198540
G11:  (,0) [W12] 225000
A12:  [W15] 'Late charges
C12:  (,0) [W12] 3000
D12:  (,0) [W12] 1938
E12:  (,0) [W12] 2310
F12:  (,0) [W12] 5320
G12:  (,0) [W12] 6500
A13:  [W15] 'VCR RENTAL
C13:  (,0) [W12] 8000
D13:  (,0) [W12] 4560
E13:  (,0) [W12] 6650
F13:  (,0) [W12] 9200
G13:  (,0) [W12] 19800
C14:  [W12] \-
D14:  [W12] \-
E14:  [W12] \-
F14:  [W12] \-
G14:  [W12] \-
A15:  [W15] 'Total Income
C15:  (,0) [W12] +C11+C12+C13
D15:  (,0) [W12] +D11+D12+D13
E15:  (,0) [W12] +E11+E12+E13
F15:  (,0) [W12] +F11+F12+F13
G15:  (,0) [W12] +G11+G12+G13
A17:  [W15] 'Expenses:
A18:  [W15] 'Salaries
C18:  (,0) [W12] 38642
D18:  (,0) [W12] 21346
E18:  (,0) [W12] 27458
F18:  (,0) [W12] 77610
G18:  (,0) [W12] 90800
A19:  [W15] 'Rent
C19:  (,0) [W12] 24000
D19:  (,0) [W12] 18000
E19:  (,0) [W12] 19800
F19:  (,0) [W12] 36000
A20:  [W15] 'Utilities
C20:  (,0) [W12] 6000
D20:  (,0) [W12] 4800
E20:  (,0) [W12] 5400
F20:  (,0) [W12] 7200
G20:  (,0) [W12] 12000
A21:  [W15] 'Cost of goods sold
C21:  (,0) [W12] 40000
D21:  (,0) [W12] 31642
E21:  (,0) [W12] 35600
F21:  (,0) [W12] 78000
G21:  (,0) [W12] 65000
A22:  [W15] 'Repairs
C22:  (,0) [W12] 7500
D22:  (,0) [W12] 3688
E22:  (,0) [W12] 4321
F22:  (,0) [W12] 5150
G22:  (,0) [W12] 15000
C23:  (,0) [W12] \-
D23:  (,0) [W12] \-
E23:  (,0) [W12] \-
F23:  (,0) [W12] \-
G23:  (,0) [W12] \-
A24:  [W15] 'Total Expenses
C24:  (,0) [W12] +C18+C19+C20+C21+C22
D24:  (,0) [W12] +D18+D19+D20+D21+D22
E24:  (,0) [W12] +E18+E19+E20+E21+E22
F24:  (,0) [W12] +F18+F19+F20+F21+F22
G24:  (,0) [W12] +G18+G19+G20+G21+G22
A27:  [W15] 'Net Income
C27:  (,0) [W12] +C15-C24
D27:  (,0) [W12] +D15-D24
E27:  (,0) [W12] +E15-E24
F27:  (,0) [W12] +F15-F24
G27:  (,0) [W12] +G15-G24
C28:  (,0) [W12] \=
D28:  (,0) [W12] \=
E28:  (,0) [W12] \=
F28:  (,0) [W12] \=
G28:  (,0) [W12] \=
```

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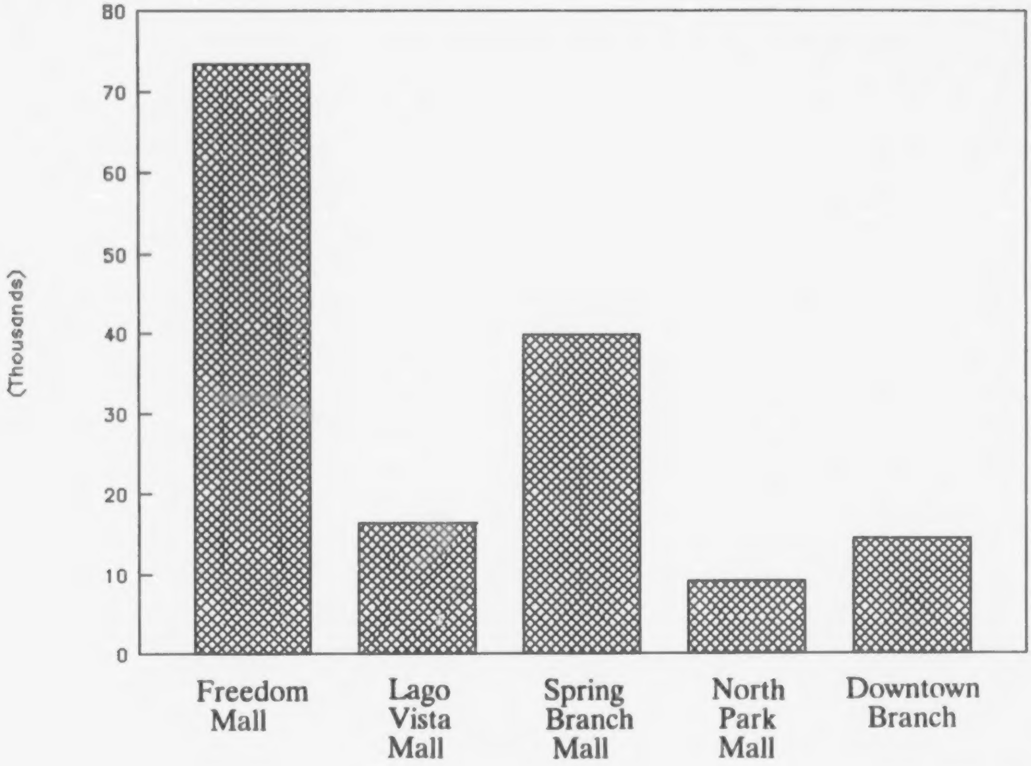
Bar Graph of Net Incomes



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Projected

Video Masters, Inc.

PROJECTED NET INCOME FOR 19-- TO 19--

for Lago Vista Mall and the Downtown Branch

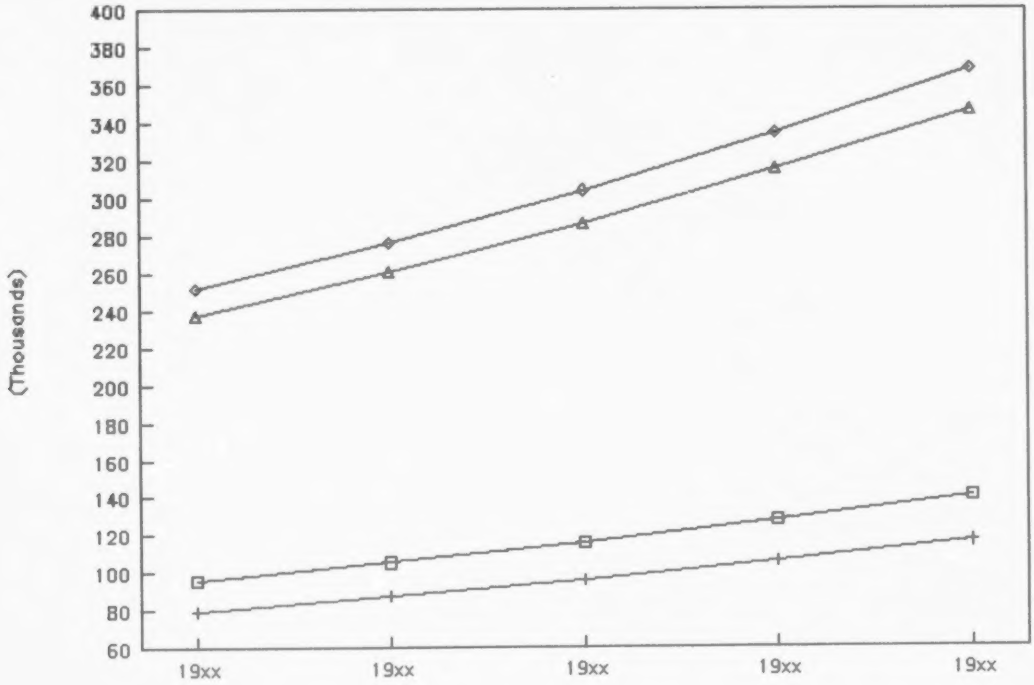
Lago Vista Mall	19--	19--	19--	19--	19--
Income	**95,843**	**105,427**	**105,427**	**127,567**	**140,324**
Expenses	**79,476**	**87,424**	**96,166**	**105,783**	**116,361**
Downtown Branch					
Income	**251,300**	**276,430**	**304,073**	**334,480**	**367,928**
Expenses	**236,800**	**260,480**	**286,528**	**315,181**	**346,699**

The first column should be taken from the current year and projected out four years. If the software cannot accommodate all five years, delete the last year, and only have a comparison of the current year and three subsequent years.

Printout of Formulas

```
C1:   'VIDEO MASTERS, INC.
B2:   'PROJECTED NET INCOME FRO 19XX TO 19XX
A3:   [W12] '          FOR LAGO VISTA MALL AND THE DOWNTOWN BRANCH
A5:   [W12] ^LAGO VISTA
B5:   ^19XX
C5:   ^19XX
D5:   ^19XX
E5:   ^19XX
F5:   ^19XX
A6:   [W12] ^MALL
A8:   [W12] 'Income
B8:   (,0) 95843
C8:   (,0) +B8*0.1+B8
D8    (,0) +C8*0.1+C8
E8:   (,0) +D8*0.1+D8
F8:   (,0) +E8*0.1+E8
A10:  [W12] 'Expenses
B10:  (,0) 79476
C10:  (,0) +B10*0.1+B10
D10:  (,0) +C10*0.1+C10
E10:  (,0) +D10*0.1+D10
F10:  (,0) +E10*0.1+E10
A13: [W12] ^DOWNTOWN
A14: [W12] ^BRANCH
A16: [W12] 'Income
B16: (,0) 251300
C16: (,0) +B16*0.1+C16
D16: (,0) +C16*0.1+C16
E16: (,0) +D16*0.1+D16
F16: (,0) +E16*0.1+E16
A18: [W12] 'Expenses
B18: (,0) 236800
C18: (,0) +B18*0.1+B18
D18: (,0) +C18*0.1+C18
E18: (,0) +D18*0.1+D18
F18: (,0) +E18*0.1+E18
```

Line Graph of Projections



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EVALUATION SHEET

Date Completed **Project** **Grade**

______ **Net Income for Branch Offices** ______

Redo Y N
Mailable Y N

______ Branch Offices
______ Format Correct
______ Numbers Verified
______ Formulas Correct
______ Totals Correct
______ Printout of Formulas Included
______ Graph Correct
______ Caught the Crook

Comments:

______ **Projected Net Income** ______

Redo Y N
Mailable Y N

______ Format Correct
______ Correct Numbers Used
______ Formulas Correct
______ Projections Correct
______ Totals Correct
______ Printout of Formulas Included
______ Graph Correct

Comments:

Student Name ______ Class ______

VIDEO MASTERS, INC.

CONGRATULATIONS! You have been hired as a special investigator for Video Masters, Inc., a locally owned video rental company with five branches. The video tape market is very competitive in Houston, and the company has recently been experiencing a slight decrease in sales. The company has been losing money lately and it is trying to decide if they should close or relocate some of its stores, or increase the price of movie rentals. The owner has studied the figures turned in by his five managers and cannot figure out where the money is being lost. He suspects that some managers might not be reporting all of the income or they may be overstating expenses.

The owner of Video Masters has hired you as a special investigator for the company. Your job is to verify the figures turned in by the five branch managers. As detective, you will have several tasks to perform to complete the investigation. **However, be sure to read through the procedures manual before you start to work on the project.**

Don has provided financial papers and a copy of the procedures manual for you to begin your investigative work. He has made some comments on them. After looking over the documents you plan your attack.

You know you will have to:

- Read the Procedures Manual to find out more about the company.
- Set up a spreadsheet to calculate net income for the branch stores and the entire company.
- Verify formulas--print two copies of the spreadsheet--one with formulas and the other without.
- Create a bar graph using the net income figures to illustrate the information contained in the income statement. (It has been a while since you worked with a spreadsheet program, but you remember that when graphing that you **must** save your graph so it can be used later.)

Don indicates he would like you to use the net income figures you calculated for the branches to project a yearly budget for the Vista Mall and the Downtown Branch. Increasing both the income and expenses by 10% per year.

You have devised a checklist for yourself to make sure that you don't miss anything.

Video Masters, Inc.

INCOME STATEMENT

December 31, 19--

	Freedom Mall	Lago Vista Mall	Spring Branch Mall	North Park Mall	Downtown Branch
Income:					
Rental Income	178,600	89,345	123,456	198,540	225,000
Late Charges	3,000	1,938	2,310	5,320	6,500
VCR Rental	8,000	4,560	6,650	9,200	19,800
Total Income	______	______	______	______	______
Expenses:					
Salaries	38,642	21,346	27,458	77,610	90,800
Rent	24,000	18,000	19,800	36,000	54,000
Utilities	6,000	4,800	5,400	7,200	12,000
Cost of Goods Sold	40,000	31,642	35,600	78,000	65,000
Repairs	7,500	3,688	4,321	5,150	15,000
Total Expenses	______	______	______	______	______
Net Income	______	______	______	______	______

Net income for company is ________________.

Video Masters, Inc.

PROJECTED NET INCOME FOR 19-- TO 19--

for Lago Vista Mall and the Downtown Branch

Lago Vista Mall	19--	19--	19--	19--	19--
Income	______	______	______	______	______
Expenses	______	______	______	______	______
Downtown Branch					
Income	______	______	______	______	______
Expenses	______	______	______	______	______

Print out two copies of the spreadsheet--one with the cell formulas and the other without the formulas.

Create a line graph of the information and save the graph for use later.

INVESTIGATOR FINAL CHECK LIST

Case No: 34521 **Date:**

Company: Video Masters, Inc. **Contact Person:**

Scenario: **Donald Juarez, president of Video Masters, Inc. is very frustrated. The company is experiencing financial difficulties and has been losing money lately. It has come to the point where he has to decide if some of the stores should be closed or relocated or, if the movie rental prices should be increased.**

1. Check the percentages in the procedures manual against the figures of the branches.

2. Do all of the branches show a NET INCOME?

3. Do the formulas in the cells work properly? (Check one column of the spreadsheet manually to make sure the formulae are correct).

4. Check the spelling of the words in the headers of the columns and rows against the sample.

5. Create and print out the spreadsheets for the income statement and the projected net income.

6. Create an income and expense projection for the next five years for two branches, starting with the current year.

7. Create and save the graphs.

8. Check to make sure that all the tasks in the "Order of Operations" have been completed.

Additional Comments:

Business Computer Applications I

Desktop Publishing

Simulation

INSTRUCTIONS

This is a simulation prepared for Section V, Unit III of the *Business Computer Applications I Curriculum Guide*. The simulation should be completed after the study of the reference materials in **Section V: Computer Communication Tools**. Students should have studied and completed all written work for **Unit III--Desktop Publishing**. The competency tests following these units should determine if the students are ready for the hands-on simulation.

It is recommended that you use the latest technology available to complete the simulation. You may wish to have students complete this simulation using traditional cut and paste methods first and then have them complete it using the computer and software. When the computer is used, your students will need access to a computer, a blank disk for data storage, and word processing, desktop publishing and graphics software packages of your choice. It is assumed that you have already spent time to acquaint the students with both the computer and word processing software programs that they will use.

This simulation contains the following desktop publishing activities:

- Flyer
- Registration Form
- Newsletter

SPECIFIC INSTRUCTIONS

Before beginning this simulation, students should be familiar with page layout software and font selections. A review of design principles, pointing out good and bad examples, would be appropriate at this point.

Publicity Flyer

1. Collect flyers and posters to display in the classroom.
2. Make available samples of fonts that can be used with your printer and software.
3. Have clip art available for incorporating into documents, or allow students with artistic talents (and extra time) to create drawings to share.

Employee Newsletter

1. Complete the spreadsheet simulation first. Students need to understand what a masthead is and what information should be included.

2. Determine any special features or limitations of your software that might relate to the assignment.

3. If a scanner is available, students can copy a photo of the featured employee. If not, arrangements might be made to borrow one. Clip art representing one of the featured employee's interests may be used as well.

4. Students who are more advanced in their skills can be assigned a two-page newsletter, with additional graphics options.

5. Assign students to produce a company logo, using a Draw or Paint program. This can be used as part of the masthead.

6. Make reference materials on Desktop Publishing available for use in the classroom.

7. Display samples of newsletters and brochures with formats similar to the desired one. Label the parts of the document using Desktop Publishing terms.

8. Use publishing industry terms in discussing the project.

Materials Needed:	**Equipment Needed:**
Scissors	Computer
Word processing software	Printer
Graphics software	Scanner
DTP package	Copier

ANSWERS

Evaluated to the satisfaction of the instructor.

EVALUATION SHEET

Date Completed	Project	Grade

______________ **Flyer** ______

Redo Y N

Mailable Y N

____ Completeness and Accuracy of Information
____ Readability
____ Visual Impact
____ Balance and Design
____ Use of Graphics Including Boxes

Comments:

______________ **Registration Form** ______

Redo Y N

Mailable Y N

____ Correct Size
____ Easy to Read
____ Contains Correct Information
____ Border Used

Comments:

______________ **Newsletter** ______

Redo Y N

Mailable Y N

____ Balance of Layout
____ Font Selections
____ Masthead Design
____ Use of Graphics
____ Adherence to Standard
____ Text Clarity
____ Appropriate Use of Lines, Boxes and Graphics

Comments:

Student Name ______________________________ Class ______________

VIDEO MASTERS, INC.

Welcome to Video Masters, Inc.

Video Masters, Inc. is a locally owned video rental company with five branches in the Houston area. We are pleased that you have joined the corporate staff. The management and employees at Video Masters welcome you and look forward to a long and rewarding relationship.

As PR assistant to Janice Bellah, the Manager of Public Relations, you are responsible for publicity for the organization. In addition to answering mail inquiries, you will prepare brochures and flyers that are distributed throughout the branch stores. You will also be responsible for preparing an employee newsletter twice a month, so that personnel can learn more about the organization and about each other. Many people in the community will form their opinions of Video Masters from viewing the brochures that you design.

One of the reasons you were selected for your job is your knowledge of desktop publishing. You are not expected to be an expert at drawing, but much of the work you produce will include graphics, and you must bring in clip art and graphics stored on computer diskettes or art that will be scanned.

In addition to your computer knowledge, you are expected to have good communication skills and understand the principles of document design.

Desktop Publishing Project Request Form

Requesting Department Public Relations **Date** Current
Name Janice Bellah **Phone** 555-1234
Project Name Fun Run Flyer **Due Date** ASAP

Project Type

____ Newsletter ____ Catalog ____ Book ____ Press Release
____ Brochure _x_ Flyer ____ Form ____ Other
____ Advertisement ____ Form ____ Poster ____ Other

Project Description Fun Run Flyer to be posted in our stores. "Fun Run" should be large enough to be seen across the room. Use 2-3 typefaces of your choice.

No. of Pages 1 **Graphics** ✓ **Artwork** ✓ **Others** Boxes, Borders etc

Special Fonts As needed

Paper Stock duplicator **Portrait** ✓ **Landscape** ____

Page Size 8 1/2" x 11" **Paper Color** Pink **No. of Copies** 5

Special Instructions Make sure to mention the entry forms can be picked up next to the cash register at all store locations.

Get information from preprint article.

Project File Names

________________ ________________
________________ ________________

Please attach all copy and artwork ideas to be included.

Project Approved By: ______________________
(Signature and Title)

Janice gave you a preprinted article to read about the Video Master Fun Run. You find the following points of interest . . .

The owners of Video Masters believe a corporation should take an active role in community service. As a result, they support a number of charities and civic organizations. This year, the corporation will sponsor a Fun Run to help raise money for a new wing on Children's Hospital.

The event will take place at Memorial Park on the second Saturday, two months from the current date, beginning at 9:00 a.m. and ending at 3:00 p.m. We are hoping to attract at least 500 participants, 10 years of age and above for the 3K, 5K, and 10K categories. Each participant will pay a $10 registration fee, and will sign up sponsors who, in turn, pledge contributions. All runners will be given a T-shirt and a coffee mug.

The grand prize is a weekend for two in San Antonio, including airfare, limousine, hotel, meals, and entertainment. There are many other prizes such as dinners at local restaurants, theater tickets, and free video rentals.

Numerous radio spots to announce the Fun Run have been donated by three of the local radio stations. These announcements direct listeners to go to any Video Masters store for information.

Desktop Publishing Project Request Form

Requesting Department Public Relations Date Current
Name Janice Bellah Phone 555-1234
Project Name Company Newsletter Due Date ____

Project Type

[✓ Newsletter]
____ Brochure
____ Advertisement
____ Catalog
____ Flyer
____ Form
____ Book
____ Form
____ Poster
____ Press Release
____ Other
____ Other

Project Description Refer to the Procedures Manual for suggested format.

No. of Pages 1 Graphics ✓ Artwork ____ Others Masthead/Logo

Special Fonts As needed

Paper Stock ____ Portrait ✓ Landscape ____

Page Size 8½" x 11" Paper Color ____ No. of Copies ____

Special Instructions Design Logo and Masthead for newsletter. See specific instructions in attached memo.

Take graphs from spreadsheet.

Project File Names

____ ____

Please attach all copy and artwork ideas to be included.

Project Approved By: ____
(Signature and Title)

Desktop Publishing Project Request Form

Requesting Department Public Relations Date ____

Name Janice Bellah Phone 555-1234

Project Name Fun Run Registration Due Date ASAP

Project Type

____ Newsletter	____ Catalog	____ Book	____ Press Release
____ Brochure	____ Flyer	____ Form	____ Other
____ Advertisement	X Form	____ Poster	____ Other

Project Description Prepare a form to be used for registration for the Fun Run.

No. of Pages 1 Graphics ____ Artwork ____ Others Borders

Special Fonts As needed

Paper Stock ____ Portrait ____ Landscape ____

Page Size 8½" x 5½" Paper Color Blue No. of Copies ____

Special Instructions Make sure to include the following: Event title and date, contestant name, address, telephone number, sponsor (if any), + amount of registration fee.

Project File Names

____ ____

____ ____

Please attach all copy and artwork ideas to be included.

Project Approved By: ____
(Signature and Title)

VIDEO MASTERS, INC.

From the desk of Janice Bellah

To: PR Assistant

Date: Current Date

Subject: Company Newsletter

The first issue of the company newsletter, Video Views, will be a single page, 8 1/2" x 11". In later issues it will be expanded to four or eight pages. The page format has already been established. Refer to your *Office Procedures Manual*.

The two main features of this issue are to be an article about the company's sales decrease for the current year, and a story about the Employee of the Month who is selected by a committee from within the company. You will serve on this committee.

Because this is a new newsletter, you must design a masthead. This should consist of the name of the newsletter, the volume and issue number, the month, the corporate name and a logo. You are to design the logo as well.

An interview form is available to help you gather information about the Employee of the Month. Be sure to obtain a photograph to accompany the article.

Many of the employees are aware of the sales downturn and are anxious to know the facts. You will need to examine the spreadsheet data and graphs that were assembled by the investigator. Please see me or my secretary to obtain these.

I want you to choose one or two of the graphs to print along with your article. You should write a factual description of the situation, and you may include figures as you see fit. Close the article on a positive note that will encourage employees to pull together.

You will need to write appropriate headlines for both articles, and don't forget captions for the graphs. The deadline for the newsletter is next Friday.

kj

Employee of the Month Interview Form

Name: ____

Department: ____

1. What led to your employment at Video Masters?

2. How long have you been with the company, and what has impressed you most about the company?

3. What do you do on your job and what do you like best about it?

4. Tell us something about your family and your background. Are you a Houston native?

5. Tell us about some of your hobbies and special interests.

6. What advice would you give to a new employee at Video Masters?

Business Computer Applications I

Computer Information/ Telecommunications

Simulation

INSTRUCTIONS

This is a simulation prepared for Section I, Unit 2 and Section V, Unit 1 of the *Business Computer Applications I Curriculum Guide*. The simulation should be completed after the study of the reference materials in **Section I: Introduction to Business Computer Applications** and **Section V: Computer Communication Tools**. Students should have studied and completed all written work for **Unit 2--Computer-Related Concepts** and **Unit 1--Telecommunications**. The competency tests following these units should determine if the students are ready for the hands-on simulation.

Although use of telecommunications equipment with this simulation is recommended, it is not dependent upon it. This simulation may be the most challenging to achieve all year, but the rewards of connecting your classroom to the "real world" through telecommunications can bring excitement into your classroom.

It is imperative that students have exposure to E-Mail, modem types, communication software specifications, and on-line services. The curriculum guide contains many aspects of telecommunications along with an extensive terminology list. Supplemental materials may be added to enhance this simulation.

This simulation contains the following activities:

- Fax
- Teleconference
- Time-Line Report
- E-Mail
- Computer Generation Chart
- Customer Survey/Analysis
- Report
- Voice Mail

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SPECIFIC INSTRUCTIONS

Fax Activity

1. The fax activity must be done prior to the teleconference.
2. You may wish to place a box simulating a fax machine in the corner of the room. It should be designed with a slot or cover that will lift to place the document in for sending. A copy machine or flat-bed scanner could also simulate a fax machine.
3. Local fax dealers may wish to demonstrate the use of a fax machine to your class either during or prior to this activity. Ask if it may be used for a month in your room.

Teleconference Script Activity

Be creative in your approach to using this activity. It is a vital part of the simulation. You may want to use three students on a teletalk system, conference or speaker phones. During the pause the student will be expected to respond to the questions asked in the script. Students may role-play the scenario and record it for later audio playback. The students should be required to make clear and concise responses using proper English. Good communication skills are vital to successful employment.

The skit calls for two tape recorders--one to play and one to record the student answers. At the point in the script where there is a pause sound, place a bell or a buzzer to signal the pause. This indicates that the consulting assistant (student) should begin taping on a second recorder. Three characters are needed:

Ms. Flores, President of Home Computing Network
Mr. Jeff Koneck, Representative, Comput-Advantage
Consulting Assistant

Time-Line Report

An interesting article published by the PC Users group in Dallas is provided for the students to use in preparing a one-page report and to derive a time-line. Other material may be supplemented.

E-Mail Activity

The E-mail memo (located after the skit) should be given to the student either electronically using a local bulletin board system (BBS); by dropping it into their electronic folder (if on a network; also set up a drop folder for return messages); or, if equipment is not available, simulate these activities using envelopes, folders, mailboxes, etc.

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Computer Generation Chart

A listing of some of the characteristics of computer generations is provided. You will need to provide additional characteristics from other sources for them to include. Also, provide information on the fifth generation of computers.

Customer Survey and Analysis Activity

Students are instructed to survey five people in different occupations. They are then to make an analysis of their computer and telecommunication needs.

Voice Mail

Students are instructed to debug and problem solve the difficulties Diane Williamson is having getting connected to GENIE on-line network. They are to come up with suggestions and are to voice mail them to Ms. Williamson. Students should use a tape recorder to verbalize suggestions. A printed report should also be FAXED her.

Materials Needed:

Cassette
Tape
Software
Folders, envelopes

Equipment Needed:

Computer
2 Tape recorders
Fax machine
(or have it demonstrated)
Telephone
E-mail

Telecommunications Script

Flores: Hello, this is Irma Flores, President of the Home Computing Network located in ___________(*city*). Today we are broadcasting from Dallas, Texas. It is a pleasure to have all of you together. The other participants in our conference are Mr. Jeff Koneck from Comput-Advantage and ___________(*Consulting Assistant's name*), Home Computing Networks new consulting assistant. I will act as moderator for the group.

Let's start by introducing our new consulting assistant from the ___________(*city*) office. Welcome aboard! Please tell us about yourself and your experiences using computers.

(Pause Sound) At least a two-minute response by Consulting Assistant.

Flores: Thank you, __________(*Consulting Assistant's name*), that was very interesting. We are very pleased you have decided to work for the Home Computing Network. Now, Mr. Jeff Koneck from Comput-Advantage will tell us about the new video conference equipment his company is carrying.

Koneck: Thank you, Irma. Comput-Advantage is very excited about this new addition to our line of video conferencing equipment. The new product is a video phone called the Video Connection. It will bring your employees closer and actually allow long distance, face-to-face conversations. It is available at an affordable price--even a very small business can afford it.

Flores: That's exciting, please tell us more, Jeff.

Koneck: The video phone is finally becoming a reality after being promised for more than 30 years. I can envision the video phone becoming more and more a part of our daily lives and, within just a few years, becoming just as much a part of our homes and businesses as televisions and standard telephones. The Video Connection system is installed at both ends of the conversation points. The Jetson's lifestyle will become a reality. (Ha Ha) What do you think? Are we ready for this ______________________________*(consulting assistant's name)?*

(Pause Sound) At least a one-minute response by Consulting Assistant.

Flores: A big thanks goes to Jeff and our new consulting assistant, _________, for taking time from your busy schedules for this teleconference. We are anxious to see more of Video Connection's lines.

By the way _________(*consulting assistant's name*), I received the fax about the availability of the modems and software. Thanks for sending it. The information will be very valuable to our new customers here in Dallas.

Does anyone have anything to add?

Koneck: I am sure once you have tried the new Comput-Advantage Video Connection line, you will be as excited about this product line as we are.

Flores: I'm looking forward to it. Thanks again, hope to see you next time I am in Dallas. Maybe I can assign _________(*consulting assistant's name*) to do the training on the new Video Connection video phones. I am sure you would love to meet in person. Goodbye.

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E-Mail Memo (to be given to Students for Project 855)

Home Computing Network

MEMO

TO: Consulting Assistant

FROM: Joyce Perkins, Head Consultant

DATE: January 24, 19--

RE: Evaluation of DeLeon Hardware/Software Requirements

I have been consulting with the DeLeon family about getting them set up on-line. They need this information today and I will be in a meeting, so I won't have time to look it up. Would you please check out their needs and transmit your suggestions along with prices.

The DeLeon family has an IBM compatible with 2 disk drives (5 1/4") and a 20 mg hard drive. Mr. and Mrs. DeLeon are anxious to use their system to save time shopping and to keep track of their finances. The children would like to do research for their school work. Brian, 19, is doing extensive research on current events and needs to have a special project in by the end of next month.

Please refer to the services available and get back to me with suggestions.

J. Perkins

ANSWERS

Fax Activity

Home Computing Network

FAX TRANSMITTAL COVER SHEET

TO: Irma Flores, President
Home Computing Network

FROM: Consulting Assistant's Name
Home Computing Network

Number of pages including this cover sheet: 2

If there are any questions regarding this transaction, please contact:

Consulting Assistant's Name	393-8000	(293) 555-1234
Name	Phone No.	FAX No.

Fax Activity Price Information-may vary

Comput-Advantage

2231 Arizona, Dallas, TX 75237 (214) 555-3987 FAX (214) 459-9090
(All items immediately available from Dallas warehouse.)

Telecommunications Components

Modems	Suggested Retail
Internal Modems	
Baud	
2400 - Digitan 2400	$ 99.00
9600 - Hayes Smartmodem V.42 9600IN	785.00
External Modems	
(Requires a serial port or RS232 communications board and cable. See below)	
Baud	
2400 - Digitan 2400	119.00
2400 - Digitan Pocket 2400	189.00
9600 - Hayes Smartmodem V.42	789.00
Communication Boards	
STB I/O AT 2 Serial/1 parallel	59.99
Suntek Serial I/O	49.99
Cables	
RS232 to RS232 (Serial to Modem)	25.00
RS232 to 9 pin (Modem to Mac SE, II)	25.00
RS232 to D pin (Modem to Mac 512, 512E, +)	25.00
Communication Software	
Brooklyn Bridge 3.0 (IBM)	99.00
Crosstalk 3 1/2" (IBM)	159.00
Crosstalk 5 1/4" (IBM)	59.99
Microphone II (MAC)	249.00
Procomm Plus (IBM)	79.00
PRODIGY (IBM)	59.00
PRODIGY (MAC)	59.00
Quick Mail PC 5 User	259.00

"We can fit the hardware needs for all systems.
You need it, we can find it."

Time-Line Report

Evaluated to the satisfaction of the instructor.

E-Mail - Reply

Home Computing Network

MEMO

TO: Joyce Perkins, Head Consultant

FROM: _______________, Consulting Assistant

DATE: Current date

RE: DeLeon Hardware/Software

Here are a few suggestions for the DeLeons:

2400 Baud Digitan Internal modem	$ 99.00
Procomm Plus communications software	79.00
StarText - on-line service for research	CALL
PRODIGY software and service for purchasing	59.00

I hope this helps. Let me know if I can help in any other way.

(Name)

(This is a sample of an acceptable E-Mail reply. Evaluate the message to the satisfaction of the instructor.)

Fax Activity

Home Computing Network

FAX TRANSMITTAL COVER SHEET

TO: Diane Williamson

FROM: Consulting Assistant's Name
Home Computing Network

Number of pages
including this cover sheet: (3)
(Cover, 1-2 pages about Genie.)

If there are any questions regarding this transaction, please contact:

Consulting Assistant's Name	393-8000	(293) 555-1234
Name	Phone No.	FAX No.

EVALUATION SHEET

Date Completed		**Project**	**Grade**
______________		**Project 723: Fax Reply**	______
Redo	Y N	____ Information Complete	
		____ Information Correct	
Mailable	Y N	____ Neat	
		____ Proper Format	
		____ Fax Cover Sheet	
		____ Information Complete	
Comments:			
______________		**Project 738: Teleconference**	______
Redo	Y N	____ Vocal Clarity	
		____ Prepared Speech	
Mailable	Y N	____ Natural Sounding	
		____ Organized	
		____ Clear	
Comments:			
______________		**Project 852: Time-Line Report**	______
Redo	Y N	____ One-Page Summary of Article	
		____ Good Format	
Mailable	Y N	____ Time-Line Prepared	
		____ Proper English Usage	
Comments:			

Student Name ______________________________ Class ______________

BCAI/Simulations
Computer Information/Telecommunications Evaluation Sheet

Date Completed	Project	Grade
______________	**Project 855: E-Mail Reply**	______

Redo Y N
Mailable Y N

____ Memo in Proper Format
____ Correct Information Provided
____ Proper English Usage
____ Neat

Comments:

______________	**Project 862: Computer Generation Chart**	______

Redo Y N
Mailable Y N

____ Good Layout
____ Correct Information
____ Fifth Generation Material Added
____ Well Organized
____ Neat

Comments:

______________	**Project 864: Survey/Analysis**	______

Redo Y N
Mailable Y N

____ Five Surveys Completed
____ Five Analyses Completed
____ Five Telecommunication Analyses Completed
____ Valid Suggestions Provided
____ Neat

Comments:

Student Name ______________________________ Class ______________

BCAI/Simulations
Computer Information/Telecommunications Evaluation Sheet

Date Completed	Project	Grade
______________	**Project 865: Report**	______

Redo Y N
Mailable Y N

_____ Good Summarizing Techniques
_____ Proper English Usage
_____ Logical Organization
_____ Logical Conclusions
_____ Interesting
_____ Proper Format
_____ Neat

Comments:

______________	**Project 868: Voice Mail**	______

Redo Y N
Mailable Y N

_____
_____
_____
_____
_____

Comments: Software Settings to check
- a. Baud
- b. Parity
- c. Stop Bits
- d. Data Bits
- e. Duplex--Full or Half

Vocal Clarity
FAX Report
Realistic and Pragmatic Suggestions
Neat

Student Name ______________________________ Class ______________

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HOME COMPUTING NETWORK

Congratulations! You have been hired as a Consulting Assistant for the Home Computing Network. The qualifications for this position are a working knowledge of telecommunications, computers and software, and excellent human relations skills. Your primary responsibilities are to survey customers, analyze customer surveys, troubleshoot problems to determine customers needs, and train customers to use the system. The duties will be assigned by your supervisor, Ms. Joyce Perkins, our Head Consultant. Ms. Irma Flores is the President of the Home Computing Network. She does a lot of traveling between branch offices and makes teleconference presentations.

The Home Computing Network is a computer service oriented company that advises, consults, trains, and sets-up home computer systems with telecommunication capabilities. We can link any household to the telecomputing world by using a computer and a modem. Through the services of our trained personnel, homes across America now have the ability to do research, purchase products, send and receive messages and play a vital role in the computing community. The linking of homes to the world through computers not only allows customers to transfer data electronically to other computer users faster and more efficiently, it allows them to be a part of the future.

We are pleased you have chosen the Home Computing Network to begin your career in technology.

Good luck in your new position!

Home Computing Network

Project Request 723

From the desk of Irma Flores
Department Administration
Extension 612
Due Date Immediately
Document Name Tellist--FAX
Disposition from ______

Type of Project

✓ Letter, Memo, Report
___ Project Management
___ Telemanagement
___ Electronic Mail
___ Database
___ Graphics
___ Spreadsheet
___ Calendaring
___ Image Processing
___ Forms
✓ Other FAX

Formatting Instructions

Document Name ______
Form Name ______
Variables ______
___ Report Format
___ Letter Format
___ Memo Format
___ Single Space
___ Double Space
1" Margins

Printing Instructions

___ Rough Draft
___ Final Copy
___ Other
1 No. of Copies
Paper: 1 Plain
___ Letterhead
___ Form
___ Mailing Labels

Special Instructions

From the Comput-Advantage list in our Office Procedures Manual, prepare a tabular form similar to the CA list and list only the following items:

- Digitan Modem Model 2400 Internal; Model 2400 External
- Pocket 2400
- Hayes Smart-modem 9600 Internal & External models
- Communication programs compatible to these models for the IBM and Macintosh.

Send this information via FAX to me at (214) 555-9765. I need this info. for a meeting immediately after today's teleconference. Use the FAX cover sheet in the Office Procedures Manual. Make a copy of it and fill it out.

Submitted for Approval

___ (Supervisor's Initials)
___ Approved
___ Disapproved

Home Computing Network

Project Request 738

From the desk of Irma Flores
Department Administration
Extension 612
Due Date Today
Document Name Teleconference
Disposition from ____

Type of Project

____ Letter, Memo, Report
____ Project Management
✓ Telemanagement
____ Electronic Mail

____ Database
____ Graphics
____ Spreadsheet
____ Calendaring

____ Image Processing
____ Forms
X Other Teleconference Speech

Formatting Instructions

Document Name ____
Form Name ____
Variables ____
____ Report Format
____ Letter Format
____ Memo Format
____ Single Space
____ Double Space
____ Margins

Printing Instructions

____ Rough Draft
____ Final Copy
____ Other
____ No. of Copies
Paper: ____ Plain
____ Letterhead
____ Form
____ Mailing Labels

Special Instructions

Prepare a two-minute talk about your experience and background. Jeff Koneck, our Comput-Advantage sales representative, wants to meet you so I have arranged a teleconference at noon today, while I'm in Dallas with him. You may want to make some notes prior to the teleconference and practice. Your voice impression is very important! Jeff will explain more about the video conferencing equipment demonstrated in Las Vegas last month on which we will provide training. Listen carefully, he will ~~wont~~ want a one-minute response. I know you will do a good job!

Submitted for Approval

____ (Supervisor's Initials)
____ Approved
____ Disapproved

Home Computing Network

Project Request 852

From the desk of Joyce Perkins
Department Consulting
Extension 817
Due Date Begin. of next wk.
Document Name Time Line Report
Disposition from ___

Type of Project

✓ Letter, Memo, [✓ Report]
___ Project Management
___ Telemanagement
___ Electronic Mail
___ Database
___ Graphics
___ Spreadsheet
___ Calendaring
___ Image Processing
___ Forms
___ Other
___

Formatting Instructions

Document Name TIMELINE
Form Name ___
Variables ___
✓ Report Format
___ Letter Format
___ Memo Format
✓ Single Space
___ Double Space
1" around Margins

Printing Instructions

___ Rough Draft
✓ Final Copy
___ Other
1 No. of Copies

Paper:
___ Plain
___ Letterhead
___ Form
___ Mailing Labels

Special Instructions

The attached article is very interesting but much too long. Prepare a one-page business report. On a separate page prepare a time-line of important events. Make sure you have proofread it and made all the corrections. Print a copy of the documents for my approval before we include them in the materials to be distributed at our staff meeting next Wednesday.

Submitted for Approval

___ (Supervisor's Initials)
___ Approved
___ Disapproved

Solid State Electronics History

Tom E. Krieg, BSME, PE, MBA
Investment Management and Research

North Texas PC NEWS--January 1989, "The Family Tree of Personal Computers."

The key players in this section of history are the story of the transistor and the integrated circuit.

The transistor story was born in the Bell Telephone Labs. The objectives were to develop something better than the vacuum tube. It had to do the same job, do it faster, cheaper, more easily, be lighter in weight, operate more cooly, and be more reliable.

The researchers on this task were three scientists, Walter Brattain, William Shockley, and John Bardeen. The critical experiment began in November and December of 1947. "Brattain wrapped gold foil around a plastic knife edge and slit the foil with a razor blade to make two closely spaced lines of foil" said Bardeen in an article in *Science '84*. "This was pressed against a block of germanium that had an electrical connection at its base. A small positive voltage was applied to the other (emitter) and a large negative voltage to the other (collector), both relative to the base contact."

"An electric current introduced into the germanium at the emitter flowed not to the base contact but to the collector and added to the collector current. Our device amplified by a factor of about 50," said Bardeen. The device was a success and needed only a name. Transistor is an acronym of "transition resistor."

(Source: The Amazing Transistor, Key to the Computer Age by Ross R. Olney and Ross D. Olney, Atheneum, 1986, N.Y. 1963, Chapter 4.)

This invention was to start a new form of electronics that would be revolutionary and spelled the end of the vacuum tube as a large industry.

The next breakthrough came from an engineer working in his laboratory at Texas Instruments. Jack St. Clair Kilby put together the first integrated chip using wires to connect the various parts together. On September 12, 1958, Jack Kilby demonstrated a working model of the Integrated Circuit (IC), a 7/16 inch slice of germanium. About six months later, Frank Noyce at Fairchild Semiconductors succeeded in developing his IC with a slightly different facet--called the planer process that eliminated the need for wires. This process enabled the manufacturers to preprint a circuit design onto the silicon surface.

From this modest beginning sprang an industry of a new type of semi-conductors that spans the globe. This was only the start.

By 1967, Texas Instruments had invented the hand-held calculator and everybody had to have one.

In 1968 Frank Noyce and his associate Gordon Moore left Fairchild Semi-Conductor and founded Intel. They elected to pursue the development of integrated chips that do more than just work in calculators.

In 1970, Intel released the 1K Dynamic Random Access Memory (DRAM) chip. (TI invented the "single chip microprocessor"--the computer birth. Texas Instruments write-up credits Mike Cochran and Cary Boone with the invention. Received Patent No. 4,074,351 on February 14, 1978 for the microcomputer chip.)

In 1971 Intel invented their first microprocessor, the 4-bit 4004, with computing power of 60,000 operations per second and 2,300 components. Intel invented the first EPROM 2K (Read only memory).

The remarkable point about the 4004 is that it had the computing power of the first Eniac computer built in 1946 which weighed about 30 tons (60,000 lbs.) powered by 18,000 vacuum tubes. Here was a chip one could hold very easily on a finger. (The 32 kilobyte microprocessor, successor to the 4004, was 30,000 times cheaper than the ENIAC and 200 times faster.)

1975--First personal computers entered the market. A do it yourself version called the Altiar was advertised in *Popular Electronics*. During the next five years the names of Apple Computing, Radio Shack, and IBM would become well known and use the microprocessor to create the microcomputer age.

The integrated circuit made possible small computers for almost every conceivable need from space to oil well drilling. The evolution and rate of change in IC chips produced a new type of chip and made an existing one obsolete on a yearly basis. The chip life had about a three year cycle from innovation to production until it became obsolete, not worn out. That might take several years once imbedded in equipment.

1986--Texas Instruments fabricated the first gallium arsenide IC on silicon substrate.

Intel introduced the 80286 microprocessor which was able to process data much faster than the 8086. It made its first appearance in 1987 model equipment.

Intel coordinated with programmers on the capability of the soon to be released 80386 microprocessor.

1987--First 1 megabyte chips produced by AT&T. This was a major breakthrough in microprocessor design and production.

IBM announced the PC System 2 with the Intel 80386 Microprocessor.

IBM announced the new MicroBus system for internal data management.

1988--Compaq announced their Desktop series 386 with the 80386 chip that will run on DOS.

1988--A consortium of personal computer makers announced that they are not following IBM's Microbus standard for internal Data Management but would stay with the traditional system bus that would allow their customers to upgrade without having to give up their old programs.

1988 and beyond. SEMATECH has goals of technology development that will help produce the 4 megabyte chip. The next phase will focus on 16 megabyte capability. The third phase which depends on the success of the first two is planned to go for 64 megabyte chip production.

Applications--the most interesting prospect on the horizon is the Intel 80486 microprocessor chip. Using the appropriate software, one can build a super computer to compete with the Cray by ganging several processors together to solve a common problem. Under these conditions, the microprocessor driven CPU would be a more cost effective investment for a given application and with sufficient power, could even give Cray a run for the money.

For those of you who were raised on a mainframe here are some rough approximations of equivalent power of the PC at various times

1974 PC* using Intel 8080 chip--IBM 704 of 1954 vintage

1977 PC using ZILOG Z80 chip-IBM 7094 of 1962 vintage

1981 PC using Intel 8088 chip--PDP 11/70 1975 vintage

1984 PC/AT Intel 80286 chip--VAX 11/780 1977 vintage

1987 Compaq 386 wf Intel 80366--VAX 8600 1984 vintage

1990 ?? Intel 80486 chip--IBM 3090 1985 vintage

Source: Business Week September 26, 1988.

Now for one more little bit of perspective on the magnitude of change that has taken place that strikes closer to home. Every day on TV we are told about the number of shares traded on the New York Stock Exchange (NYSE) - a very slow day is 120 million shares. Just go back to 1957 for the whole year there were about 559.9 million shares traded - that's for the whole year. On Oct. 19, 1987, in ONE DAY, 640+ million shares changed hands and people got upset because the computer ran 3 hours behind in processing their orders.

In my opinion, we witnessed an achievement of monumental proportions and yet investors were still not satisfied that enough had been done. If we are to project on a straight line, in 30 years 160 billion shares per day will be the peak order processing the NYSE. Throughout these historical reviews I have tried to focus on the impact of change - some of it hurt at the time but also to bring into view the forces that were at work that led to the next improvement. In some cases there were driving demands from the public and in others there was more like a serendipity of ideas coming together at the right time at the right place. The demands were on the industry to do something to replace the radio tube or produce a more reliable vacuum tube. The demands on solid state were to overcome the size and heat barrier that led to the integrated circuit. The response to high speed processing was again more research on how best to achieve a faster processor. This led to very large scale integrated circuits, which in turn started questions about why so may commands were necessary, which started the programming inquiry over again. This leads us then to what is ahead. The next section can only suggest some general categories that appear vulnerable to resolving questions of utilization, programming, and hardware evolution as well as the direction in which some scientists are working to push back the veils of darkness.

---

*Kits where one assembled one's own computer.

Future Research - Future for Integrated Circuits

There is an interesting challenge that will be encountered by the attempts at miniaturization. Each one of these increases in chip capacities is premised on being able to reduce the size of the circuits and components so as to get more pieces on a chip. We are already working with circuits (lines) that are as fine as a human hair, about 100 micron. If you don't have much hair, try feeling the thickness of the edge of a piece of paper. Now, to move to the 4 megabyte capacity, the experts estimate that the connecting circuits will be about 0.8 microns. So shave about 20% of the hair from the strand or the edge of the paper. To get 16 megabytes, that strand of hair is reduced to half its original size and the edge of the paper is reduced to 1/2 what you started with. The third phase will be even tougher and that is to reduce the line size to just 30% of the original thickness. This is a 60% reduction in size from where you were.

While all this going on with the circuits (lines), the components are having to undergo an equal reduction to achieve a corresponding increase in performance on a single chip.

There is one concern that keeps haunting me and that is the effect of stray radiation on these miniature components. We know that the earth is bombarded with various kinds of rays. At some point, it seems to me, there is a strong likelihood that the designer may be faced with a tradeoff between small size versus shielding for minimum weight and maximum performance.

The second question that comes to mind is this: Is it necessary to put everything on one chip? Can we not connect chips together to accomplish a particular objective in computing?

Future Trends Involving Computers and People

The October 1988 issue of *PC Computing* has an article headed by Irene Greif on the trend of the Workgroup and computing in the business environment. Several articles are suggesting that the power of the PC is rapidly overtaking the Mainframe computer and that we have in our hands today the smarts to guide and direct the future use of the PC.

It is extremely difficult to envision the need for so much power to be available unless it is used in a workgroup environment. The key ingredient or thesis of the workgroup idea is a knowledge base. In computer parlance this is some form of relational data base that has some common point of entry whereby each member of the workgroup can communicate significant information to each other without being sure who they are but knowing that your contribution will fit into a master framework, and update, as necessary, any older data residing therein.

The problems under research basically are divided into software and hardware. In the fall of 1988, the hardware is outpacing the software--there is more capacity and power than there is software to take advantage of all this capability. By 1990 we should be seeing microprocessors that can process 4 megabytes of information or instructions per second. Some are hinting that even this may be a conservative estimate.

The mode of thinking until recently has been one person/one PC. In the workgroup thinking there is a mixture of the network, teamwork and the individual all trying to perform their expertise to accom-

894

lish more than as single individuals. This is a change in the way of doing things that can better reduce the redundancy in operations.

The change in performance brought about by the workgroup could very well open the door to an entirely new type of software dynamics that results from the needs of the workgroup. This could lead also to a new set of requirements on the hardware.

So far, the advances in microprocessors have been refinements on the earlier successes. We are still dealing with a chip containing specific program instructions to perform certain operations faster. If you consider that the methodology is now about 30 years old then in about another 20 years it will be replaced by something else. Let's consider what that something else might be.

There are three places in the United States where there is research is going on involving Neuron and Synaptic mapping. One is MIT, one is Stanford, and the other is the Dallas Metroplex. The Bell Telephone Laboratories have succeeded in making a chip that duplicates the neuron and connected it into a small circuit. It is still slow but it works. The latest report on the neuron research was that a "tractor beam" had been developed that enabled the researchers to move a piece of the internal neuron without destroying it (*Dallas Morning News*). Previous problems encountered involved how to measure the electrical energy flow across the neuron without destroying it.

At this time, the neuron technology has some major problems to overcome before it can be a real contender as a replacement in the microprocessor chip market. The research on using Bacteria needs an even bigger break through. Both of these have to solve the problem of how to connect or duplicate the action of the study areas so that they can be attached to wires and incorporated into the electronic devices they will be replacing.

If the Integrated Chip Microprocessor does not have an immediate contender for replacement--what are some of the future expectations of these miracle chips?

The one getting the most attention is the plan of grouping several Microprocessors together and, with a special program, go into competition with:

The Mini-Computers

The Main Frame Computers

The high speed Scientific Computers (Small Cray Computers)

Grouping several of the Super PC computers into a Product Design Center--all feeding a central "Knowledge Base" and each PC equipped for special design conditions and solutions.

This brings to a close the series of articles that examines in a quasi-historical manner the development and evolution of computing and the associated fields that collaborated in arriving at where we are today.

Acknowledgements:

World Book Encyclopedia, 1958 and subsequent issues. This provided a good starting point for a listing of key dates

Dallas Morning News and *Dallas Times Herald*, Clipping Service provided by the Dallas Public Library--for background information on Jack St. Clair Kilby and Robert N. Noyce, and Sematech.

Texas Instruments in-house publication--*50 Years of Progress at Texas Instruments*.

International Correspondence School Handbook, 1923 on Radio.

The Amazing Transistor, Key to the Computer Age, by Ross R. Olney and Ross D. Olney, Atheneum, 1986, Chapter 3, "The Electron Tube." Chapter 4, "Description of the Invention of the Transistor."

Business Week, September 26, "1988--Intel, The Next Revolution." This information on Intel differs from the information available on Texas Instruments accomplishments. Where conflicts occurred, I tried cross checking. The Dallas newspaper articles tended to support TI.

PC Computing, October 1988, "The Electronic Workgroup", "New Ways to Work Together." Zipp Davis Publishing Co.

Home Computing Network

Project Request 855

From the desk of Joyce Perkins
Department Consulting
Extension 817
Due Date Today's Date
Document Name E-Mail
Disposition from ____

Type of Project

____ Letter, Memo, Report
____ Project Management
____ Telemanagement
✓ Electronic Mail
____ Database
____ Graphics
____ Spreadsheet
____ Calendaring
____ Image Processing
____ Forms
____ Other ____

Formatting Instructions

Document Name ____
Form Name ____
Variables ____
____ Report Format
____ Letter Format
____ Memo Format
____ Single Space
____ Double Space
____ Margins

Printing Instructions

____ Rough Draft ____ Final Copy ____ Other ____ No. of Copies
Paper: ____ Plain ____ Letterhead ____ Form ____ Mailing Labels

Special Instructions

I realize this is a new service, so this is a reminder to check your mail box for E-mail messages at least twice a day.

Respond to these messages and requests immediately!

Submitted for Approval

____ (Supervisor's Initials) ____ Approved ____ Disapproved

Home Computing Network

Project Request 862

From the desk of Ms. Perkins
Department Consulting
Extension 817
Due Date Tomorrow Morning
Document Name Computer Generations
Disposition from ____

Type of Project

____ Letter, Memo, Report
____ Project Management
____ Telemanagement
____ Electronic Mail

____ Database
____ Graphics
____ Spreadsheet
____ Calendaring

____ Image Processing
✓ Forms /Chart
____ Other
____

Formatting Instructions

Document Name COMPGEN
Form Name Computer Generation Chart
Variables ____

____ Report Format
____ Letter Format
____ Memo Format

____ Single Space
____ Double Space
1" Margins

Printing Instructions

____ Rough Draft
✓ Final Copy
____ Other
2 No. of Copies

Paper:
✓ Plain
____ Letterhead
____ Form
____ Mailing Labels

Special Instructions

Using the Computer Generation Information on the attached page, update the information with the materials provided by your supervisor. Make sure and include information about the fifth generation.

Design a form or a chart that illustrates the similarities and differences of the five computer generations. Use graphics, borders, and/or chart format.

Make sure to proofread the document very carefully. It will be included in a presentation next week.

Submitted for Approval

____ (Supervisor's Initials)
____ Approved
____ Disapproved

COMPUTER GENERATION CHART

First Generation

1950s

Use of vacuum tubes in electronic circuits.
Limited primary storage capacity.
Slow input/output.
Punched-card oriented.
Symbolic-language programming.
Heat and maintenance problems.
First commercial computer-UNIVAC I.

Second Generation

1960s

Use of transistors for internal operation.
Increased primary storage capacity.
Storage external to the computer.
Great reduction in size and heat generation. English-like programming languages.

Third Generation

1960s

Use of integrated circuits.
Increased storage capacity.
More flexibility with input/output.
Smaller size-emergence of minicomputers.
Better performance and reliability.
"Family" concept of compatible computers-IBM System 36.
Growth of software industry.
Remote terminals.

Fourth Generation

1970s and 1980s

Use of large scale, integrated circuits.
Increased storage capacity and speed.
Introduction of microprocessors, microcomputers, and supercomputers.
Fast development of software industry..
User-friendly emphasis.

Fifth Generation

(For your research notes)

Home Computing Network

Project Request 864

From the desk of Irma Flores
Department Administration
Extension 612
Due Date End of month
Document Name Computer Purchasing Survey
Disposition from ____

Type of Project

____ Letter, Memo, Report
____ Project Management
____ Telemanagement
____ Electronic Mail
____ Database
____ Graphics
____ Spreadsheet
____ Calendaring
____ Image Processing
✓ Forms
✓ Other
Survey

Formatting Instructions

Document Name ____
Form Name ____
Variables ____
____ Single Space
____ Double Space
____ Report Format
____ Letter Format
____ Memo Format
____ Margins

Printing Instructions

____ Rough Draft
____ Final Copy
____ Other
____ No. of Copies

Paper: ____ Plain ____ Letterhead ✓ Form ____ Mailing Labels

Special Instructions

Make five (5) copies of the attached Computer Purchasing Survey form. Contact five people from various occupations and prepare a survey form for them.

Prepare a Computer Analysis sheet for each survey, using your own judgement and the Compute-Advantage price list in the Office Procedures Manual.

Prepare a Telecommunications Worksheet for each survey. Attach all three pages together. You should have five sets.

Submitted for Approval

____ (Supervisor's Initials) ____ Approved ____ Disapproved

Home Computing Network
Computer Purchasing Survey

Customer Name ______________________________
Address ______________________________
City, State, Zip ______________________________
Phone Number ______________________________

List the names, ages, and education levels of those who live in your household.

____
____
____
____
____
____

Who will be the primary users?

____
____

What do you plan to use your computer system for?

____
____
____
____

Rate the experience you have with computers from 1 to 5 with 1 indicating very experienced and 5 indicating no experience. ____

What is your price range for the entire computer system?

____

Home Computing Network
Computer Analysis Sheet

1. What type of CPU? Costs?

2. How many and types of Disk Drives? Costs?

3. What peripherals are needed? Costs?

4. What software is needed or recommended? Costs?

5. What, if any, training is needed? Costs?

Additional Comments

Home Computing Network
Customer Analysis Sheet
Telecommunications Worksheet

Customer Name ____

Consultant Assistant ____

Date of survey ____________________ Follow-up Date ________________

1. What type of modem?

   Internal ________ Baud Rate ________

   External ________

2. Communication software suggestions?

3. On-Line service suggestions?

4. What, if any, training is needed?

Home Computing Network

Project Request 865

From the desk of Ms. Perkins
Department Consulting
Extension 817
Due Date End of month
Document Name Survey Report
Disposition from ____

Type of Project

✓ Letter, Memo, [✓ Report]
____ Project Management
____ Telemanagement
____ Electronic Mail

____ Database
____ Graphics
____ Spreadsheet
____ Calendaring

✓ Image Processing
____ Forms
____ Other
____

Formatting Instructions

Document Name ____
Form Name ____
Variables ____
____ Report Format
____ Letter Format
____ Memo Format
____ Single Space
____ Double Space
____ Margins

Printing Instructions

____ Rough Draft ____ Final Copy ____ Other ____ No. of Copies
Paper: ____ Plain ____ Letterhead ____ Form ____ Mailing Labels

Special Instructions

Prepare a one-page report analyzing the information that you gathered from the five surveys. Make comparisons of the similarities and the differences of the users, their experience with computers, their computer needs, etc. You may wish to use charts and graphs to substantiate your numbers.

Get together with the other consulting assistants and prepare a group report.

Submitted for Approval

____ (Supervisor's Initials) ____ Approved ____ Disapproved

Home Computing Network

Project Request 868

From the desk of Joyce Perkins

Department Consulting

Extension 817

Due Date ASAP

Document Name Research on Genie

Disposition from

Type of Project

Letter, Memo, Report
Project Management
Telemanagement
[✓ Electronic Mail]
Database
Graphics
Spreadsheet
Calendaring
[✓ Image Processing]
Forms
Other

Formatting Instructions

Document Name
Form Name
Variables

Report Format
Letter Format
Memo Format

Single Space
Double Space
Margins

Printing Instructions

Rough Draft
Final Copy
Other
No. of Copies

Paper: Plain
Letterhead
Form
Mailing Labels

Special Instructions

Diane Williamson called and has had difficulty setting up the communications software to work with GENIE on-line network. What suggestions do you have for her? Please leave these suggestions on her voice mail box and prepare a written (printed) copy of the suggestions. FAX the printed copy to her at (915) 779-3963. Use the FAX cover sheet from the Office Procedures Manual. Diane is anxious to hear your voice response as well as see the FAX copy. She can't seem to get GENIE up and running.

Submitted for Approval

(Supervisor's Initials)
Approved
Disapproved

B C A INCORPORATED

Office Procedures Manual

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GENERAL PROCEDURES

BASIC LETTER PARTS/BLOCKED FORMAT

B C A Incorporated
3925 South Fifth Avenue
El Paso, TX 79930-9736

DATE	April 1, 19--
INSIDE ADDRESS	Ms. Ginny Ono, Vice President Softedge Computerware and Training 8339 Ewing Road Minneapolis, MN 75431
SALUTATION	Dear Ms. Ono:
BODY	Thank you for your interest in our corporation and in beginning a branch of the Home Computing Network in your area. I have given your name to Ms. Irma Flores, President of the Home Computing Network, and asked her to call to give more direct information about the business. I am very pleased that this concept is of interest to you and am sure that Ms. Flores can assist you. Thank you for contacting us.
COMPLIMENTARY CLOSING	Sincerely,
	Theresa Kolachek
SIGNATURE LINES	Theresa Kolachek President
REF. INITIALS	jc

INTEROFFICE MEMORANDUMS

B C A INCORPORATED

MEMO

TO: Ms. Jefferson, Finance Department

FROM: Mr. Cintron

DATE: December 15, 19--

SUBJECT: Special Meeting

Please come to my office at 9 a.m. on Thursday, December 20. I have requested that all my "right hand" people come at that time so I can show them a little appreciation for all their hard work this year.

I look forward to seeing you then.

xx

MINUTES OF THE MEETING

PSYCHEDELIC WHEELS

Minutes of the
Organizational Tasks Meeting
Tuesday, June 1, 19--

Mr. Escalante called the meeting on Organizational Tasks to order at 10 a.m. All department heads were present. Deanna McClure read the minutes from the last meeting.

The department heads indicated that they were having trouble finding time to get ready to implement the Organizational Tasks Project within their departments. The majority of the department heads requested that they be allowed compensation for overtime work on four Saturdays in June in order to get the project ready for implementation by July 1. They requested that Mr. Escalante pursue this matter with Mr. Escobar.

Mr. James, Finance Department, said we would have enough money in the proposed budget for the extra hours. He suggested that a time-card be punched for each Saturday worked so he would have some tracking of the extra time, if the propossal was approved.

The group decided to set the next meeting date for June 15, 19--

Ricardo Escobar
Ricardo Escobar

Deanna McClure
Deanna McClure

ADDRESS LABEL FORMAT/ROLODEX CARD FORMAT

JUDITH SUMMERS
2008 GEORGE DIETER AVENUE
EL PASO TX 79930-9732

JUDITH SUMMERS

YWCA Child Care Center
2008 George Dieter Avenue
El Paso, TX 79930-9732
(915) 866-9856

ENVELOPE FORMAT

B C A Incorporated
3925 South Fifth Avenue
El Paso, TX 79930-9736

PSYCHEDELIC WHEELS
3210 DAUPHINE
EL PASO TX 79930-9732

PROOFREADER'S MARKS

MARK	MEANING
^ V	insert
#	insert space
⊙ or ^.	insert period
lc or /	lower case
≡ or cap	capitalize
¶	paragraph
⁀ ‿	close up, no space
◯ or sp.	spell it out in full
— or ℘	delete
stet or	do not change
⊐	move right
⊏	move left
ss	single space
ds	double space
∽	transpose or turn around
//	align
〰	bold
- - - -	italics
← →	center

SAMPLES OF PROPER ENGLISH

COMMONLY MISSPELLED WORDS

absence
accidentally
accommodate
accompanying
achievement
acquaintance
across
aggressive
aging
aisle
alignment
all right
already
analysis
analyze
answer
apparently
approximate
architect
argument
assistance
attorney
autumn
bachelor
bankruptcy
basically
beginning
believe
benefited
boundary
breakfast
brochure
buses
business
calendar
calorie
campaign
canceled
catalog
category
cemetery
census
changeable
column
committee
comparison
conscience
consistent
continuous
controversy
convenience
criticism
debt
defense
definite
dependent
describe
development
dilemma
disappoint
dissatisfied
double
eighth
either
eligible
eliminate
embarrass
emphasize
empty
environment
exaggerate
exceed
excellent
exercise
existence
experience
extension
extraordinary
eyeing
familiar
fantasy
fascinating
February
foreign
forfeit
forty
fourteen
fourth
fulfill
glamour
government
grammar
grateful
guarantee
guardian
harass
height
hygiene
incidentally
jeopardy
judgment
laboratory
ledger
leisure
liable
library
license
lien
lightning
likable
lose
maintenance
marriage
mileage
millionaire
miscellaneous
mischievous
misspell
mortgage
motor
movable
necessary
negotiate
neither
ninety
ninth
noticeable
nuclear
occasionally
occurrence
offense
offered
oneself
opinion
pamphlet
parallel
partially
patience
permissible
persistent
persuade
physician
possessions
practically
practice
privilege
procedure
proceed
psychological
quantity
receipt
receive
recommend
reference
reinforce
relevant
restaurant
resume
retroactive
rhythm
schedule
scissors
seize
separate
siege
similar
sincerely
skillful
souvenir
sponsor
summary
surgeon
surprise
technique
temperature
their
theory
thoroughly
through
totaled
tragedy
traveler
unforgettable
unique
usage
vegetable
victim
volume
Wednesday
weird
whether
yield

FAMILIAR WORDS

RATHER THAN	SAY
propound	ask
numerous	many
acknowledgement	reply
subsequent	later
cognizant	aware
terminate	close or end
initiate	begin
frequently	often
purchase	buy
equitable	fair
commence	start
communication	letter
gratuitous	free
concur	agree
possess	have or own
retain	keep
approximately	about
endeavor	try
converse or confer	talk
assistance	help
ascertain	find or learn

POSITIVE WORDS

ability
advantage
agreeable
benefit
comfortable
confident
dependable
deserving
effective
exclusive
enjoy
fitting
fortunate
generous
good
gratifying
happy
help
kind
lasting
pleasant
please
pleasure
profit
prominent
recommend
responsible
satisfaction
success
thoughtful
welcome

SUBSTITUTE PHRASES

INSTEAD OF	SAY
contact you by telephone	call you
in the event that	if
for the purpose of	for
it is probable that	probably
may or may not	may
in order to	to
with this letter I am enclosing	enclosed is
at an early date	soon
due to the fact that	because
meets with our approval	we approve
at the present time	now
in a position to	can
reason is because	because
in the course of	during
at this point in time	now
in the near future	soon
please do not hesitate	please
the early part of next month	early next month
if this should prove to be the case	in that case
at all times	always
this day and age	today
experience indicated that	we learned

SPECIFIC COMPANY INFORMATION

Entertainment Sensations

Home Computing Network

Psychedelic Wheels

Video Masters

ENTERTAINMENT SENSATIONS

ENTERTAINMENT SENSATIONS OFFICERS

President	Eddy Entertainment
Manager	Mike Manager
Secretary	Tillie Secretary

DATABASE PROCEDURES

1. Be sure to check whether the database software program has restrictions on the maximum number of entries allowable and a maximum number of characters in a field name.
2. It may be necessary to use abbreviations if software has these restrictions. The abbreviations should be consistent and make sense. Example: Always use two-letter abbreviations for the names of states.
3. Punctuation marks such as periods and commas take up valuable space. It is recommended that you do not use these when entering data.
4. All items should be entered in the same order. It will be impossible to use the database program accurately if the same order of reentry is not followed.
5. Identify the field name data as follows:

Singer/Group	Rock singing star or the rock singing group.
Address, City and ZIP	Complete mailing address of the agent.
Agent	Individual who is in charge of all the group's affairs and who will communicate on behalf of the singer.
Number In Group	Number of performing members of the group.
Box Office Minimum	The minimum amount of money that the singer/group will receive from the concert. Usually, the group requires a percentage of box office take, but the minimum amount must be met regardless of the receipts from ticket sales.

Remember, as long as your company maintains this singer/group as a client, you will need to keep the records updated.

HOME COMPUTING NETWORK

POLICIES AND PROCEDURES

Distributor

Comput-Advantage is currently our primary distributor. Its warehouse is located in Dallas. United Parcel Shipping (UPS) is its primary carrier. Mr. Jeff Koneck is our representative and all correspondence should be addressed to him. Jeff is familiar with our operations and has an excellent working relationship with our company. Refer to the price list for the hardware necessary to set up our customers.

Our cost is 40% below retail on 1-5 items, 45% on 6-10 items, 50% on 11-20 items, and 55% on 20+ items. Special pricing may be negotiated on large orders and bids.

Company Correspondence

Compu-Net is for company correspondence. Use the local Tymnet number to access the system. The Compu-Net software is on every employee's laptop computer issued to them at time of employment. This network is to be used for E-mail among our employees. Each employee should check his/her mail twice daily. The system is being watched carefully by our budget and finance department to validate the usage of the system versus the mail system. When traveling out of the local Tymnet number range, refer to the Tymnet manual for the local number in or near your location.

All E-mail correspondence shall include RE: and, as common courtesy, end with your name.

The company is very environmentally oriented; therefore, please follow these procedures:

1. Save electronic messages to disk.
2. Print only when absolutely necessary or at the request of a supervisor.
3. Recycle paper and use both sides when it is only a rough draft copy whenever possible.

On-line Services

It has been found that the following on-line services are preferred by our company. Present the following on-line service suggestions for customers:

STARTEXT	Research, current events, sponsored by the Ft. Worth Star Telegram newspaper.
DIALOG	Research, national on-line service.
PRODIGY	Nationwide, news, stock prices, electronic mail, electronic shopping.

Customer Surveys and Analysis

After each Customer Survey is completed it should have a Computer Analysis and a Telecommunications Worksheet prepared. Make sure that they are completely filled in before they are submitted to your immediate supervisor. Each consultant and consulting assistant is expected to complete five Customer Surveys with the follow-up analysis documentation every two weeks.

HOME COMPUTING NETWORK

Computer Purchasing Survey

Customer Name Ronnie Nelson
Address 8245 West 105th Street
City, State, Zip El Paso, TX
Phone Number (915) 424-1212

List the names, ages, and education levels of those who live in your household.

Jayne	12	7th grade
Karl	8	3rd grade
Robert	35	Masters Degree

Who will be the primary users?

Ronnie, Robert and Jayne

What applications will you use on your computer system?

Word processing, Spreadsheet, Database, Games

Rate the experience you have with computers from 1 to 5 with 1 indicating very experienced and 5 indicating no experience. 4 -- kids have had some in school.

What is your price range?

$2500 including printer

HOME COMPUTING NETWORK
Computer Analysis Sheet

1. What type of CPU? Costs?

286 or 386 SX

2. How many and types of Disk Drives? Costs?

0 mg. hard drive
5¼" floppy
3½" floppy

3. What peripherals are needed? Costs?

Monitors

EGA color

Printers

24-pin dot matrix
laser

Others

mouse
modem

4. What software is needed or recommended? Costs?

Word Processing -- Word Perfect / Microsoft Word
Spreadsheet -- Lotus 1-2-3 / Excell
Database -- Rbase, D.Base,

5. What, if any, training is needed? Costs?

Introductory computer operations
Specific software introductions and later advanced procedures.

Additional Comments:

Costs will be determined later - upon selection

HOME COMPUTING NETWORK

Customer Analysis Sheet

Telecommunications Worksheet

Customer Name Jason Neighbors

Consultant Assistant Jennifer Michaels

Date of survey 3-9-9X Follow-up Date 6-10-9X

1. What type of modem?

Internal ✓ Baud Rate 2400

External ____

2. Communication software suggestions?

PRODIGY

3. On-line service suggestions?

GENIE

4. What, if any, training is needed?

Start up & then reinforcement. Later advanced.

COMPUT-ADVANTAGE

2231 Arizona, Dallas, TX 75237 *(214) 555-3987* *FAX (214) 459-9090*
(All items immediately available from Dallas warehouse.)

NOVEMBER, 19____, HARDWARE PRICE LIST

CPU	**Suggested Retail**
486-45 Mhz	$ 1,500.80
386-20 Mhz VIP Bare	843.75
386SX-16 16.6SI	406.25
386-25 Golden MB	850.00
386-33 32KCASH	1,200.00
IBM SIMM (4 per set)	93.75
256KSIMM-4per Meg	26.25
286-12 Mhz, (4MMB)	143.75

Monitor Adapters

MONO Adapter W/Par	30.00
CGA Adapter W/Par	38.75
EGA Adapter	60.00
VGA Adapter	143.75
VGA (1024*768) Adapter	211.25
ATI-VGA	198.75

Monitors

MONO Monitor 12"	93.75
CGA Monitor 14"	236.25
EGA Monitor 14"	398.75
MIT XC1429C .28DOT	375.00
VGA (KLH MN180) 14"	331.25
VGA 16" (KLH .31)	811.25

Disk Drives

1.2M Floppy Drive	86.25
3.5 720K Floppy Drive	78.75
3.5 1.4M Floppy Drive	86.25
360K Floppy Drive	68.75

"We can fit the hardware needs for all systems.
You need it, we can find it."

Comput-Advantage--Hardware Price List (November, 19____)

Hard Drives	**Suggested Retail**
20 MEG ST-225	$ 230.00
30 MEG	300.00
40 MEG ST-251-1 28	337.50
65 MEG ST277R	423.75
80 M ST-4096	656.25
80 MB ST296n W.CNTR	581.25
40 MB ST157 IDE DRV	331.25
71 MB ST IDE DRV	438.75
160 MB ST4182E 16MS	1,123.75
330MB ST 18MS ESDI	1,706.25
Keyboard	
KEYBOARD Keytrn101	51.25
Printers	
Mamnesmann Tally Laser	999.00
Star nx-1000II +CA	193.75
Star nx-2400 Print	373.75
Mouse	
Logitech Serial Mouse	85.00
Networks	
NOVELL Lev I	498.75
NOVELL Lev II	1,243.75
NOVELL ADVANCED	1,998.75
Modems	
Internal Modems	
Baud	
2400 - Digitan 2400	99.00
9600 - Hayes Smartmodem V.42 9600IN	85.00

"We can fit the hardware needs for all systems.
You need it, we can find it."

Comput-Advantage--Hardware Price List (November, 19____)

	Suggested Retail
External Modems	
(Requires a serial port or RS232 communications board and cable)	
Baud	
2400 - Digitan 2400	$ 119.00
2400 - Digitan Pocket 2400	189.00
2400 - Intel MNP	279.00
9600 - Hayes Smartmodem V.42	789.00
9600 - U.S. Robotics Courier HST	699.00
Communication Software	
Brooklyn Bridge 3.0 (IBM)	99.00
Crosstalk 3 1/2" (IBM)	159.00
Crosstalk 5 1/4" (IBM)	59.99
Microphone II (MAC)	249.00
Procomm Plus (IBM)	79.00
PRODIGY (IBM)	59.00
PRODIGY (MAC)	59.00
Quick Mail PC 5 User	259.00
Communication Boards	
STB I/O AT 2 Serial/1 parallel	59.99
Suntek Serial I/O	49.99
Cables	
RS232 to RS232 (Serial to Modem)	25.00
RS232 to 9 pin (Modem to Mac SE, II)	25.00
RS232 to D pin (Modem to Mac 512, 512E, +)	25.00

"We can fit the hardware needs for all systems.
You need it, we can find it."

Home Computing Network

FAX TRANSMITTAL COVER SHEET

TO: ______________________________
____

FROM: ______________________________
____

Number of pages
including this cover sheet: ______________________

If there are any questions regarding this transaction, please contact:

____
Name Phone No. FAX No.

PSYCHEDELIC WHEELS

PSYCHEDELIC WHEELS

ADMINISTRATORS AND DEPARTMENT HEAD LIST

Title	Name	Department	Ext.
President	Jose Escobar	Administration	200
Vice President	Jesus Escalate	Administration	220
Treasurer	Karen Black	Administration	240
Secretary	Deanna McClure	Administration	260
Department Head	Lee Collier	Sales	315
Department Head	Paul James	Finance	430
Department Head	Henry Johnson	Custodial	550
Inventory Controller	Ronald Hanks	Inventory	620

SOFTWARE POLICY

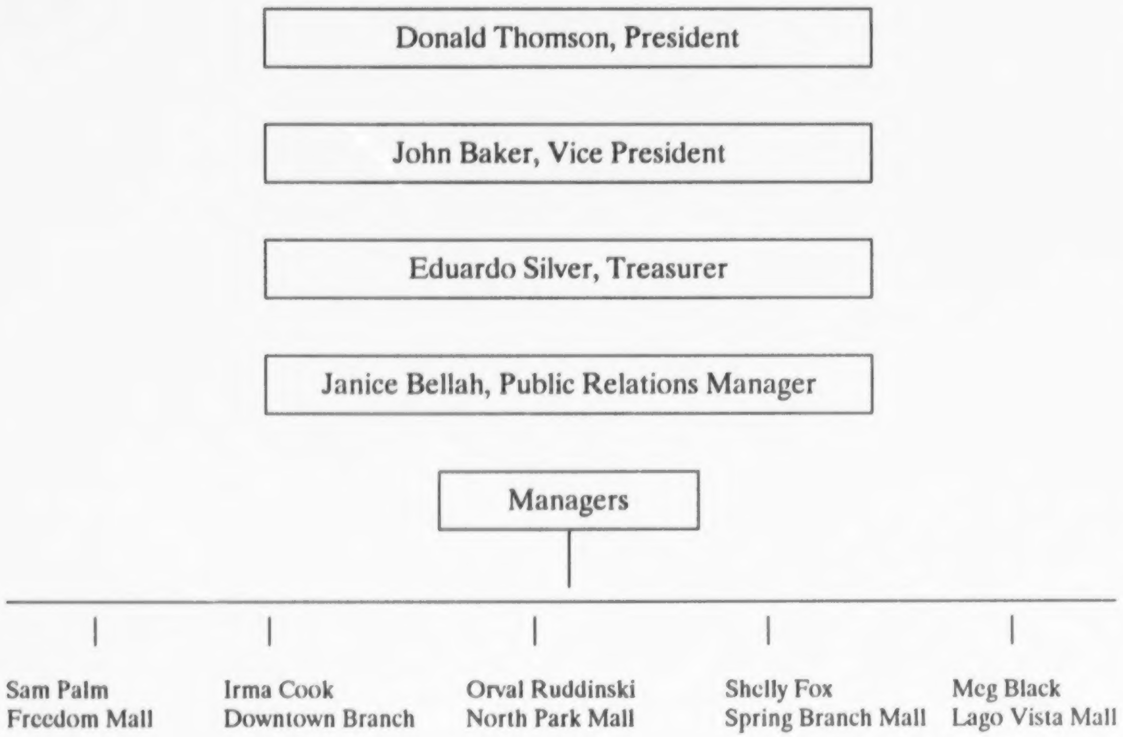
The company's policy relating to the use of software follows the information and instructions that accompany new software packages. It is **illegal** to copy software unless the program specifically states that a person, or company may do so.

Psychedelic Wheels has purchased the copy license for several software packages. However, this does not mean that an employee may copy the program for his/her personal use.

Failure to comply with this policy will result in termination of employment.

VIDEO MASTERS, INC.

ORGANIZATIONAL CHART


Donald Thomson, President
John Baker, Vice President
Eduardo Silver, Treasurer
Janice Bellah, Public Relations Manager
Managers
Sam Palm
Freedom Mall
Irma Cook
Downtown Branch
Orval Ruddinski
North Park Mall
Shelly Fox
Spring Branch Mall
Meg Black
Lago Vista Mall

INFORMATION AND PROCEDURES

Terminology:

Income	Money received by a business for goods or services provided.
Expenses	Money paid out by a business as a cost of doing business. For example, rent.
Net Income	The difference between income and expenses or the profit that a business makes.
Net Loss	When the expenses of a business exceed the income, resulting in a loss.
Break-even Point	The point at which goods or services are paid for by a business. Example, if an item to be rented costs $50, when it has been rented enough times to generate $50 in income, that is the break even-point.

Calculating Formulas:

Income minus Expenses = Net Income (I - E = NI)

In calculating the formulae for the cells, remember:

Add all the income items to equal total income.

Add all the expense items to calculate total expenses.

Total income minus total expenses = net income.

Add the income for all the branches to come up with net income for the entire company.

In calculating the expense figures for the branches, use the following guidelines:

Salaries should not exceed 30% of the rental income.

Rent should not exceed 25% of the rental income.

All of the branches should have a net profit.

Additional Information

In order to calculate the net income for Video Master, use the following information:

The five branch names are:

Freedom Mall
North Park Mall
Lango Vista Mall
Downtown Branch
Spring Branch Mall

Income to be included in the spreadsheet and their definitions are:

Salaries	Paychecks for employees
Rent	Rent for each store
Utilities	Electricity, water, gas
Cost of goods sold	Cost of video tapes to rent
Repairs	Cost of repair to VCRs or damaged tapes

VIDEO VIEWS

Donald Thomson, President
*915 Miller Drive * Houston, TX 78701-0915 * (409)55V-IDEO*
VOL. XX:, Issue X
MARCH, 199X

GERALDINE JENKINS

EMPLOYEE OF THE MONTH

Geraldine Jenkins, the assistant manager at the Downtown Branch office, was selected as the employee of the month for FEBRUARY.

Geraldine has been employed at Video Masters for the past four years. She actually started working for us part-time at the North Park Mall as a billing clerk when she was a student in high school in the Office Education program. Currently Geraldine is attending Houston Community College at night.

A native of Houston, Geraldine loves to go to the beach on weekends and holidays. She loves to read, watch TV, and swim when she has time. She has seven brothers and sisters at home to help with, so Geraldine is a very busy person.

Some advice to new employees at Video Masters is to: "Work hard, mind your own business, and keep a smile on your face even when the going gets rough." Actually this is good advice to everyone.

Congratulations Geraldine!

RENOVATIONS

Renovations have begun on the Freedom Mall offices. The proposed completion time is April 30. The next office to be renovated will be at the Spring Branch Mall. Orval Ruddinski and Shelly Fox have put their heads together and have decided on a color scheme that will be carried through our entire company upon approval of the Board of Directors.

We are very appreciative of the patience shown by the employees of these two branches. We know it will be worth all the trouble once it is complete!

FAMILY APPRECIATION NIGHT

The annual Family Appreciation Night will be held next Thursday evening beginning at 6:30 p.m. There will be fun and games for everyone. The children will enjoy a command performance from the Disneyland Ice Capades featuring Mickey and Minnie Mouse. The teenagers will have a private concert by Vanilla Ice. The adults will be entertained by the Beach Boys. Give a special thank you to John Baker and Janice Bellah for pulling this together for us.

Remember to put next Thursday at 6 p.m. on your schedule!!

COMPLIANCE STATEMENT

TITLE VI, CIVIL RIGHTS ACT OF 1964; THE MODIFIED COURT ORDER, CIVIL ACTION 5281, FEDERAL DISTRICT COURT, EASTERN DISTRICT OF TEXAS, TYLER DIVISION

Reviews of local education agencies pertaining to compliance with Title VI Civil Rights Act of 1964 and with specific requirements of the Modified Court Order, Civil Action No. 5281, Federal District Court, Eastern District of Texas, Tyler Division are conducted periodically by staff representatives of the Texas Education Agency. These reviews cover at least the following policies and practices:

(1) acceptance policies on student transfers from other school districts;

(2) operation of school bus routes or runs on a non-segregated basis;

(3) nondiscrimination in extracurricular activities and the use of school facilities;

(4) nondiscriminatory practices in the hiring, assigning, promoting, paying, demoting, reassigning, or dismissing of faculty and staff members who work with children;

(5) enrollment and assignment of students without discrimination on the basis of race, color, or national origin;

(6) nondiscriminatory practices relating to the use of a student's first language; and

(7) evidence of published procedures for hearing complaints and grievances.

In addition to conducting reviews, the Texas Education Agency staff representatives check complaints of discrimination made by a citizen or citizens residing in a school district where it is alleged discriminatory practices have occurred or are occurring.

Where a violation of Title VI of the Civil Rights Act is found, the findings are reported to the Officer for Civil Rights, Department of Health, Education and Welfare.

If there is a direct violation of the Court Order in Civil Action No. 5281 that cannot be cleared through negotiations, the sanctions required by the Court Order are applied.

TITLE VII, CIVIL RIGHTS ACT OF 1964; EXECUTIVE ORDERS 11246 AND 11375; TITLE IX, 1973 EDUCATION AMENDMENTS; REHABILITATION ACT OF 1973 AS AMENDED; 1974 AMENDMENTS TO THE WAGE-HOUR LAW EXPANDING THE AGE DISCRIMINATION IN EMPLOYMENT ACT OF 1967; AND VIETNAM ERA VETERANS READJUSTMENT ASSISTANCE ACT OF 1972 AS AMENDED IN 1974.

It is the policy of the Texas Education Agency to comply fully with the nondiscrimination provisions of all federal and state laws and regulations by assuring that no person shall be excluded from consideration for recruitment, selection, appointment, training, promotion, retention, or any other personnel action, or be denied any benefits or participation in any programs or activities which it operates on the grounds of race, religion, color, national origin, sex, handicap, age, or veteran status (except where age, sex, or handicap constitute a bona fide occupational qualification necessary to proper and efficient administration). The Texas Education Agency makes positive efforts to employ and advance in employment all protected groups.

BUSINESS COMPUTER APPLICATIONS I

Test Bank
1991 Edition

EDTC
Educational Development & Training Center
East Texas State University • Commerce, TX 75429

BO 302 TB

941

BEST COPY AVAILABLE

BUSINESS COMPUTER APPLICATIONS I

TEST BANK

Prepared by

Darlena Murray
Technical Writer

Jan Patton
Office Education Curriculum Specialist

Published by
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East Texas State University
Commerce, Texas

in cooperation with
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To ensure educational equity, this material has been reviewed to eliminate bias or stereotyping.

Educational Development & Training Center
East Texas State University • Commerce, TX 75429

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David Childs, Office Education Program Specialist

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Linda Cintron, Secretary
Tausha Bellah, Cindy Johnson, Tammi Weers, Student Workers

Ludonna Jackson, Editor
and Linda Baron, Word Processing Specialist

PREFACE

The test bank for the *Business Computer Applications I Curriculum* was prepared to provide quality instructional materials for instructors of Business Computer Applications I courses in Texas.

This test bank has been developed through a joint effort of the Texas Education Agency and the Educational Development and Training Center located on the campus of East Texas State University at Commerce, Texas.

The purpose of developing this test bank is to provide Business Computer Applications instructors with a test bank coordinated with the *Business Computer Applications I Curriculum*. Suggestions and comments concerning this test bank are requested to be sent to the curriculum specialist at the Educational Development and Training Center.

Instructions for Use of Test Bank Materials

The computerized testing program for Business Computer Applications I courses was designed to assist the teachers in preparing, delivering and grading tests directly on the computer. The *Test Bank* allows you to be in complete control of the test. It provides you, the teacher, with a great deal of flexibility.

The following are suggested options you may wish to consider:

- Use the test questions as they are on the data disks.
- Delete questions you decide are not needed.
- Modify the questions to meet the needs of your students.
- Add additional questions to cover new or other material you have covered that is not available in the teacher's guide.

The *Test Bank* consists of the following:

The Test Builder Program

The *Test Builder Program* was designed for use on an IBM compatible or Macintosh computer. It allows tests or drills of specified material to be given to students on the computer. The *Test Builder Program* gives students immediate feedback on their grade for that portion of the test. The teacher can easily record the grade and a listing of the question numbers missed by the student is provided. This information may be used for reteaching and retesting purposes. The *Test Builder Program* may be used in conjunction with the specified *Test Bank* for the course or by itself.

The Test Bank

The *Test Bank* contains questions derived directly from the *Business Computer Applications I Curriculum Guide*. It consists of two parts.

1. The **data disks** contain files for each unit.
2. The **hardcopy** contains the questions on the data disks and additional testing questions that are not on the data disks.

The following information further explains each part of the *Test Bank*.

The *Test Bank* Data Disks

The *Test Bank* data disks contain files of questions on each of the units in the *Business Computer Applications I Curriculum Guide.* Each test file contains true and false, multiple choice, and matching questions. The files may be modified as needed.

The *Test Bank* Hardcopy

The hardcopy of the *Test Bank* is designed as a reference for the data disks. It may also be used as a source of additional testing ideas; or, if compatible equipment is not available for the *Test Builder Program*, the hardcopy can be used as a source of test questions that relate directly to the essential elements and competencies of the course.

The hardcopy of the *Test Bank* includes true and false, multiple choice, matching, fill-in-the-blank, and essay questions. It also includes occasional brief activities. The following is a listing of what the hardcopy contains:

Front Pages: The front pages contain the following important information:

A listing of data disks and the names of files that are located on each data disk of the *Test Bank* so that the specific test can be easily located.

A copy of the essential elements for *Business Computer Applications I.*

A copy of all of the competencies covered in *Business Computer Applications I.*

Test Bank Questions: The hardcopy of the *Business Computer Applications I Test Bank* includes true or false, multiple choice, matching, fill in the blank, essay questions, and occasionally a few brief activities. The fill-in-the-blank questions, essays, and activities may be used at your own discretion--they are not on the data disks. All of the questions are based on the material in the *Business Computer Applications I Curriculum Guide.* Since several units are short, you may wish to add additional questions that have been discussed in the classroom.

Competency Matrices: A competency matrix has been included at the end of each section in this test bank. The matrix lists the number of the competency for each unit in the section and then provides the question number that addresses that specific competency. A listing of all the competencies is located in the front pages of this material.

NOTE: When using the computerized test bank, please read the instructions given for your particular computer in the *Test Builder Program* documentation. The *Test Builder Program* **will NOT work** unless you have an operating system on a disk when you format it.

If other problems or questions arise, you may call the Educational Development and Training Center at (903)886-5916 or (903)886-5124.

Business Computer Applications I

TEST BANK FILE NAMES

SECTION/UNIT	TITLES	DATA DISK 5 1/4"	DATA DISK 3 1/2"	FILE NAME
I.	INTRODUCTION TO BUSINESS COMPUTER APPLICATIONS I	1	1	
2	Computer-Related Concepts			
	True/False			BCA1U2T
	Multiple Choice			BCA1U2MC
	Matching			BCA1U2M
II.	WORD PROCESSING	2	1	
1	Concepts of Word Processing			
	True/False and Multiple Choice			BCAS2U1
	Matching 1			BCA2U1M1
	Matching 2			BCA2U1M2
2	Word Processing Applications			
	True/False and Multiple Choice			BCAS2U2
III.	ELECTRONIC SPREADSHEETS	3	2	
1	Concepts of Electronic Spreadsheets			
	True/False and Multiple Choice			BCAS3U1
	Matching 1			BCA3U1M1
	Matching 2			BCA3U1M2
2	Electronic Spreadsheet Applications			
	True/False and Multiple Choice			BCAS3U2
IV.	DATABASE MANAGEMENT	4	2	
1	Concepts of Database Management			
	True/False and Multiple Choice			BCAS4U1
	Matching			BCA4U1M

SECTION/UNIT	TITLES	DATA DISK 5 1/4"	DATA DISK 3 1/2"	FILE NAME
2	Database Management Applications			
	True/False and Multiple Choice			BCAS4U2
V.	COMPUTER COMMUNICATION TOOLS		3	
1	Telecommunications	5		
	True/False and Multiple Choice			BCAS5U1
	Matching 1			BCA5U1M1
	Matching 2			BCA5U1M2
2	Concepts of Computer Graphics	5		
	True/False and Multiple Choice			BCAS5U2
	Matching 1			BCA5U2M1
	Matching 2			BCA5U2M2
	Matching 3			BCA5U2M3
3	Desktop Publishing	6		
	True/False and Multiple Choice			BCAS5U3
	Matching 1			BCA5U3M1
	Matching 2			BCA5U3M2
4	Business Application Software	6		
	True/False and Multiple Choice			BCAS5U4
VI.	SOCIAL IMPLICATIONS OF COMPUTER USAGE	7	4	
1	Social Implications			
	True/False and Multiple Choice			BCAS6U1
	Matching 1			BCA6U1M1
	Matching 2			BCA6U1M2

BUSINESS COMPUTER APPLICATIONS I

(Blended Course)

75.87

(e) **Business Computer Applications I (1, 2, or 3 units) shall include the following essential elements:**

(1) Concepts and skills related to computer operations. The student shall be provided opportunities to:

(A) demonstrate comprehension of computer-related vocabulary;

(B) describe the functions of the components of a computer system;

(C) demonstrate and apply the capabilities of an operating system; and

(D) explore the concepts of telecommunication techniques and networking.

(2) Concepts and skills related to word processing. The student shall be provided opportunities to:

(A) demonstrate word processing concepts;

(B) apply higher-level capabilities of word processing tools and software; and

(C) understand the procedures and recognize the importance of merging data processing and word processing.

(3) Concepts and skills related to spreadsheets. The student shall be provided opportunities to:

(A) demonstrate higher-level spreadsheet concepts; and

(B) apply higher-level capabilities of spreadsheets.

(4) concepts and skills related to database management. The student shall be provided opportunities to:

(A) demonstrate database concepts, procedures, and capabilities; and

(B) apply higher-level capabilities of database management.

(5) Concepts and skills related to advanced application software. The student shall be provided opportunities to:

(A) discuss integration of people and computers for productivity;

(B) demonstrate the ability to apply information processing concepts and skills to realistic business situations;

(C) demonstrate the ability to apply information processing concepts and skills to realistic personal situations; and

(D) identify tools for preparing information for mass distribution including desktop publishing, graphics, and maintenance of electronic bulletin boards.

(6) Concepts and skills associated with the social implications of computers. The student shall be provided opportunities to

(A) examine issues concerning responsible use of computer systems; and

(B) understand the social ramifications of computer applications related to privacy, values, and reliability of systems.

BUSINESS COMPUTER APPLICATIONS I COMPETENCIES

COMPETENCIES

I. INTRO. TO BUSINESS COMPUTER APPLICATIONS

1. Introduction to the Course

NONE

2. Computer-Related Concepts

1. Identify basic computer-related terminology.
2. Outline the functions of data processing.
3. Illustrate the parts of the information processing cycle and explain how each part is interdependent within the cycle.
4. Illustrate parts of the computer processor.
5. Compare the similarities and differences among various computer systems.
6. Outline the events in history pertinent to breakthroughs in data processing.
7. Describe and apply the capabilities of an operating system.
8. Explain how the use of computer-related tools can increase productivity in an organization.

II. WORD PROCESSING

1. Concepts of Word Processing

1. Explain and demonstrate basic word processing terminology.
2. Explain the purpose of computerized word processing and identify applications for its use in business, industry, government, education, and personal uses.
3. Identify and explain the function of each equipment component within the word processing system.
4. Identify two types of storage devices within the word processing system.
5. Demonstrate the use of each equipment component within the word processing system.

2. Word Processing Applications

1. Outline and explain the steps in the document production cycle.
2. Use the steps in the document production cycle to produce a document.
3. Explain and demonstrate the formatting features of a word processing software package.
4. Explain and demonstrate the editing features of a word processing software package.

COMPETENCIES

5. Explain and demonstrate the searching/locating features of a word processing software package.
6. Demonstrate the use of the word processing software to produce a report, memo, and letter.

III. ELECTRONIC SPREADSHEETS

1. Concepts of Electronic Spreadsheets .

1. Use terminology common to electronic spreadsheets.
2. Describe the structure of electronic spreadsheets and the purposes for which they are used.
3. Identify capabilities of electronic spreadsheets.
4. Contrast and compare electronic spreadsheet software packages.

2. Electronic Spreadsheet Applications

1. Plan a spreadsheet and design a template for it.
2. Enter and manipulate data.
3. Write and use a simple macro.
4. Demonstrate some advanced mathematical functions.
5. Print and graph the results and save the template.

IV. DATABASE MANAGEMENT

1. Concepts of Database Management

1. Use terminology associated with database management systems.
2. Explain the purpose and benefits of databases.
3. List typical capabilities of database management software.
4. Describe three types of database structures.
5. Discuss criteria for comparing software packages.

2. Database Management Applications

1. Create a database.
2. Design and edit input and report forms.
3. Enter and manipulate data.
4. Query the database.
5. Use selection criteria for printing reports.

COMPETENCIES

V. COMPUTER COMMUNICATION TOOLS

1. Telecommunications

1. Properly use and define basic telecommunications terminology.
2. Describe the development of telecommunications and its uses.
3. Contrast and compare three types of modems.
4. Explain typical features of microcomputer data communication software packages.
5. Discuss procedures for uploading and downloading information.
6. Describe the kinds and types of teleconferencing, including bulletin boards.
7. Identify concepts of networking.

2. Computer Graphics

1. Define and use graphics-related terminology.
2. Describe basic graphic concepts.
3. Discuss important graphic design concepts.
4. Discuss the differences between presentation and free-drawing graphics.
5. Match different types of graphs with types of information appropriate for demonstration with those graphs.
6. Match different types of graphic hardware with graphic applications appropriate for that hardware.
7. Outline and discuss several different applications for computer graphics.
8. Create several graphic images to represent a variety of information.
9. Identify tools for preparing information for mass distribution including graphics.

COMPETENCIES

3. Desktop Publishing

1. Identify desktop publishing terms.
2. Define the basic goal and historical development of desktop publishing.
3. Compare methods of traditional publishing and desktop publishing.
4. Describe the components of desktop publishing.
5. Discuss various software programs used in desktop publishing.
6. List eight basic areas of planning to consider when preparing a graphics document for desktop publishing.
7. List the guidelines for working with various graphic representations.
8. Demonstrate the tools and procedures for producing documents using available desktop publishing procedures.

4. Business Application Software

1. Define utility programs.
2. Identify the use of several utility programs.
3. Use utility programs to enhance computer management techniques.
4. Identify and describe various types of productivity software.
5. Load, access, and use two productivity programs.

VI. SOCIAL IMPLICATIONS OF COMPUTER USAGE

1. Social Implications

1. Identify terminology related to computer crime, computer users, and new computer devices and techniques.
2. Identify the major issues and technological developments related to computers and society.
3. Describe the ethical and legal issues that have arisen as a result of the computer revolution.
4. Identify privacy issues involved with electronic data storage.
5. Explain the reasons for concern about the reliability of computer systems.

Business Computer Applications I

Section I

INTRODUCTION TO BUSINESS COMPUTER APPLICATIONS I

TEST BANK

TRUE AND FALSE

1. The definition of data processing is the handling or manipulating of information in order to achieve a desired result.
2. The information processing cycle consists of three steps: input, processing, and output.
3. The central processing unit consists of two parts: the arithmetic/logic unit and the control unit.
4. The main memory contains only ROM.
5. Types of storage include magnetic tape, magnetic disk, laser disk, and bubble memory.
6. The supercomputer is the largest and fastest type of computer.
7. The minicomputer is a computer that is portable.
8. The Leibnitz wheel is a modern device.
9. The Analytical Engine was created by Dr. Herman Hollerith.
10. Grace Murray Hopper is known as the "mother of COBOL."
11. EDSAC and EDVAC were electronic computers developed to perform mathematical operations by a stored program without human intervention.
12. Mitch Kapor created Lotus 1-2-3.
13. There are only three generations of computers.
14. Language categories include level, purpose, translation, and interaction.
15. The only types of programming languages used today are FORTRAN, COBOL, and BASIC.
16. One of the characteristics of the FORTRAN language is that it is used primarily for solving scientific, engineering, and mathematical problems.
17. One of the disadvantages of using COBOL is that it is hard to read and is not self-documenting.
18. One of the advantages of using BASIC is that it is simple and flexible.
19. One of the disadvantages of using BASIC is that it is primarily used on microcomputers.

20. One of the advantages of using PASCAL is that it requires less memory than other languages.

21. RPG was developed in about 1964.

22. C was developed by AT&T to shorten the time of system programming.

23. One of the advantages of using C is that it is an easy language to code.

24. A characteristic of ADA is that it produces the very accurate results needed in defense, weather forecasting, and oil exploration.

25. PL/1 replaced COBOL and FORTRAN.

26. LOGO does not help the inexperienced user learn logic and programming.

27. Some of the advantages of using APL are that it has a free style and a lack of restrictions on input and output.

28. FORTH was designed as a fourth-generation computer language.

29. When selecting a computer language, the purpose of the program you want should be considered.

30. The interpreter takes each instruction written in a high-level language and translates that instruction into machine code.

31. Productivity has significantly decreased because manual tasks are taking the place of computer tasks.

32. Making corrections on a typewriter is easier than making corrections on the computer.

33. Networks have become popular because software packages, data, or information can be shared among many workstations.

34. Expert systems use artificial intelligence to reason through problems.

35. If databases are correctly designed, all data can be integrated.

MULTIPLE CHOICE

1. Which of the following data processing functions gathers raw data that need to be processed?

   A. Classifying.
   B. Data collecting.
   C. Recording.
   D. Sorting.

2. Which of the following functions of data processing puts data in some form that is recognizable by person or machine?

   A. Classifying.
   B. Data collecting.
   C. Recording.
   D. Sorting.

3. Which of the following functions of data processing puts data in ascending/descending alphabetical or numerical order?

   A. Classifying.
   B. Data collecting.
   C. Recording.
   D. Sorting.

4. Which of the following functions of data processing arranges data according to some logical relationship?

   A. Classifying.
   B. Data collecting.
   C. Recording.
   D. Sorting.

5. Which of the following functions of data processing performs mathematical operations?

   A. Calculating.
   B. Communicating.
   C. Storing and retrieving.
   D. Summarizing.

6. Which of the following functions of data processing places data on some type of media for future use?

   A. Calculating.
   B. Communicating.
   C. Storing and retrieving.
   D. Summarizing.

7. Which of the following functions of data processing condenses data and information?

   A. Calculating.
   B. Communicating.
   C. Storing and retrieving.
   D. Summarizing.

8. Which of the following functions of data processing transfers data from one place to another?

    A. Calculating.
    B. Communicating.
    C. Storing and retrieving.
    D. Summarizing.

9. Which of the following is NOT a step of the information processing cycle?

    A. Summary.
    B. Processing.
    C. Output.
    D. Input.

10. Which of the following is NOT a function of the computer processor?

    A. It edits and moves data.
    B. It serves as permanent storage.
    C. It makes logical decisions.
    D. It controls input and output devices.

11. Which of the following types of storage burns holes in the surface for the data to be stored?

    A. Bubble memory.
    B. Laser disk.
    C. Magnetic disk.
    D. Magnetic tape.

12. Which of the following is NOT a characteristic of sequential access to stored data?

    A. Data are retrieved in the order they were stored.
    B. This type of access is mainly used for batch processing.
    C. It is also known as random-access.
    D. It is the only retrieval method that can be used for magnetic tape.

13. Which of the following is NOT a characteristic of direct access to stored data?

    A. Data are retrieved in the order they were stored.
    B. It is also known as random-access.
    C. Records can be read in any order.
    D. Magnetic disks are used for this type of storage.

14. Which of the following is NOT a characteristic of a supercomputer?

    A. Used in applications such as nuclear physics, meteorology, and petroleum engineering.
    B. Installation requires a specially prepared subflooring to support the weight of the computer and special plumbing to carry the fluorocarbon fluid needed as a coolant.
    C. The CRAY is the only model on the market today.
    D. About 150 had been installed through 1987.

15. Which of the following is NOT a characteristic of a mainframe computer?

A. The cost is over $400,000.
B. It serves more than one user.
C. Most amateur programmers work in the mainframe environment.
D. Used by banks, large commercial and industrial companies, and government agencies.

16. Which of the following is NOT a characteristic of a minicomputer?

A. It can be relocated conveniently.
B. It has the same type of input and output devices as the mainframe computer.
C. The cost is between $10,000 and $40,000.
D. Larger and more powerful than the mainframe computer.

17. Which of the following is NOT a characteristic of a microcomputer?

A. It has unlimited capabilities.
B. Does not require a data processing expert to operate it.
C. It fits on a desk or table.
D. It supports peripheral devices.

18. Which of the following devices was the EARLIEST counting machine?

A. Abacus.
B. Leibnitz wheel.
C. Napier's bones.
D. Pascaline.

19. Which of the following devices was one that consisted of rods or bones to perform calculations in 1614?

A. Abacus.
B. Leibnitz wheel.
C. Napier's bones.
D. Pascaline.

20. Which of the following devices was the FIRST mechanical adding machine that could add and subtract?

A. Abacus.
B. Leibnitz wheel.
C. Napier's bones.
D. Pascaline.

21. Which of the following devices was the FIRST calculator that could add, subtract, multiply, divide, and do square roots?

A. Abacus.
B. Leibnitz wheel.
C. Napier's bones.
D. Pascaline.

22. Which of the following devices was the FIRST machine that could automatically weave patterns on cloth?

    A. Analytical Engine.
    B. Jacquard's loom.
    C. Leibnitz wheel.
    D. Pascaline.

23. Which of the following was a machine that included a memory, calculator, and a control part that moved numbers back and forth between the memory and the calculator?

    A. Analytical Engine.
    B. Jacquard's loom.
    C. Leibnitz wheel.
    D. Pascaline.

24. Which of the following people is referred to as the FIRST programmer?

    A. Dr. Herman Hollerith
    B. Grace Murray Hopper
    C. Ada Augusta Lovelace
    D. T. J. Watson, Sr.

25. Which of the following people developed the punched card mechanical processing machine?

    A. Dr. Herman Hollerith
    B. Grace Murray Hopper
    C. Ada Augusta Lovelace
    D. T. J. Watson, Sr.

26. Which of the following people bought Hollerith's company and changed the name to IBM to convey the broadness of the scope he wanted for the company?

    A. Charles Babbage
    B. Grace Murray Hopper
    C. Ada Augusta Lovelace
    D. T. J. Watson, Sr.

27. Which of the following people coined the term "bug" and "debug"?

    A. Dr. Herman Hollerith
    B. Grace Murray Hopper
    C. Ada Augusta Lovelace
    D. T. J. Watson, Sr.

28. Which of the following devices was a mechanical device that was the FIRST machine to use a stored program concept?

    A. EDSAC and EDVAC.
    B. ENIAC.
    C. Mark I.
    D. UNIVAC I.

29. Which of the following devices was the first electronic calculator developed by Dr. John W. Mauchly and J. Presper Eckert under a contract from the U. S. Army?

    A. EDSAC and EDVAC.
    B. ENIAC.
    C. Mark I.
    D. UNIVAC I.

30. Which of the following devices was developed to perform mathematical operations by a stored program and without human intervention?

    A. EDSAC and EDVAC.
    B. ENIAC.
    C. Mark I.
    D. UNIVAC I.

31. Which of the following devices was the first commercial computer?

    A. EDSAC and EDVAC.
    B. ENIAC.
    C. Mark I.
    D. UNIVAC I.

32. Which of the following people was the entrepreneur who bought Radio Shack and then turned its focus to electronics?

    A. John Kemeny
    B. Jack Kilby
    C. H. Ross Perot
    D. Charles Tandy

33. Which of the following people was the entrepreneur who created the largest computer service (EDS) firm in the world?

    A. John Kemeny
    B. Jack Kilby
    C. H. Ross Perot
    D. Charles Tandy

34. Which of the following people was the engineer who invented the integrated circuit/silicon chip/microchip in 1958 while working at Texas Instruments in Dallas, Texas?

    A. John Kemeny
    B. Jack Kilby
    C. H. Ross Perot
    D. Charles Tandy

35. Which of the following people developed the first BASIC program in 1964 on a time-sharing system?

    A. John Kemeny
    B. Jack Kilby
    C. H. Ross Perot
    D. Charles Tandy

36. Which of the following people was the man who worked with John Kemeny?

    A. Nolan Bushnell
    B. Thomas Kurtz
    C. Jack Tramiel
    D. Stephen Wozniak

37. Which of the following people was the first person to make a video game that fit into a box that could be put in an arcade?

    A. Nolan Bushnell
    B. Thomas Kurtz
    C. Jack Tramiel
    D. Stephen Wozniak

38. Which of the following people was one of the men who created the Apple computer in 1976?

A. Nolan Bushnell
B. Thomas Kurtz
C. Jack Tramiel
D. Stephen Wozniak

39. Which of the following people was the creator of the Commodore PET?

A. Nolan Bushnell
B. Thomas Kurtz
C. Jack Tramiel
D. Stephen Wozniak

40. Which of the following people worked with Stephen Wozniak on the Apple computer?

A. Daniel Bricklin
B. Steve Jobs
C. Mitch Kapor
D. Adam Osborne

41. Which of the following people developed the first electronic spreadsheet (VisiCalc) while in college taking business classes?

A. Daniel Bricklin
B. Steve Jobs
C. Mitch Kapor
D. Adam Osborne

42. Which of the following people designed his computer to fit under an airplane seat?

A. Daniel Bricklin
B. Steve Jobs
C. Mitch Kapor
D. Adam Osborne

43. Which of the following people developed Lotus 1-2-3?

A. Daniel Bricklin
B. Steve Jobs
C. Mitch Kapor
D. Adam Osborne

44. Which of the following computer generations introduced the integrated circuit?

A. First.
B. Second.
C. Third.
D. Fourth.

45. Which of the following computer generations was characterized by the use of vacuum tubes?

A. First.
B. Second.
C. Third.
D. Fourth.

46. Which of the following computer generations was introduced in 1971?

    A. First.
    B. Second.
    C. Third.
    D. Fourth.

47. Which of the following computer generations allowed computers to be programmed with English-like commands instead of numbers?

    A. First.
    B. Second.
    C. Third.
    D. Fourth.

48. Which of the following is NOT a characteristic of the fifth generation of computers?

    A. It is based on the advent of artificial intelligence operating systems.
    B. The operating systems use terminology very close to normal English syntax.
    C. This is the first generation that introduced the minicomputer.
    D. Artificial intelligence systems are programmed with enormous banks of data, based on expert opinion.

49. Which of the following computer languages is expressed in binary notation?

    A. Assembly language.
    B. English language.
    C. High-level language.
    D. Machine language.

50. Which of the following computer languages replaced the binary code with symbolic names that were easier to remember?

    A. Assembly language.
    B. English language.
    C. High-level language.
    D. Machine language.

51. Which of the following computer languages uses English-like commands?

    A. Assembly language.
    B. English language.
    C. High-level language.
    D. Machine language.

52. Which of the following is NOT a characteristic of FORTRAN?

    A. It is the oldest high-level language.
    B. Is is well-suited for file maintenance, editing of data, or production of documents.
    C. It can quickly execute mathematical problems.
    D. It is used primarily for solving scientific, engineering, and mathematical problems.

53. Which of the following is an advantage of using FORTRAN?

A. It is more English-like than any other language.
B. It is easy to use, powerful, flexible, and self-documenting.
C. It is popular because it is widely used by programmers.
D. It works on all computers.

54. Which of the following is NOT a characteristic of COBOL?

A. It is primarily used on microcomputers.
B. Developed in 1960 to be used in business applications.
C. Very popular, procedure-oriented language that is easy to understand, maintain, and modify.
D. Used heavily in commercial and government computer installations.

55. Which of the following is NOT an advantage of using COBOL?

A. Reasonably machine-independent, so programs are transportable.
B. Coding is fast because there is very little to write.
C. More like English than FORTRAN.
D. Easy to read and tends to be self-documenting.

56. Which of the following is NOT an advantage of using BASIC?

A. It is primarily used on microcomputers.
B. It can be used for a wide variety of applications.
C. It is simple and flexible.
D. It has an unstructured nature.

57. Which of the following is NOT a disadvantage of using BASIC?

A. A lack of standardization.
B. Limited transportability.
C. The diagnostic messages are poor.
D. Slow execution speed.

58. Which of the following is NOT a characteristic of PASCAL?

A. It can be used on microcomputers.
B. It is the newest computer language.
C. It is experiencing the most rapid growth rate.
D. It should soon gain acceptance in the business world.

59. Which of the following is NOT an advantage of using PASCAL?

A. It is well-suited for both batch and interactive uses.
B. It requires less memory than several of the other languages.
C. It is highly standardized.
D. It is easy to learn.

60. Which of the following is NOT a characteristic of RPG?

A. It requires a very large compiler.
B. It was developed in 1964.
C. It is used for processing files for accounts receivable, accounts payable, inventory, and the general ledger.
D. It was designed to process data for generating and printing business reports.

61. Which of the following is NOT a characteristic of C?

A. It is used for system programs, utility programs, and graphics applications.
B. It was one of the first computer languages.
C. It works on most computers.
D. It can be used for text processing and database programs.

62. Which of the following is NOT an advantage of using C?

A. Application programs can be written in a matter of months rather than years.
B. It is user-oriented and machine-efficient.
C. It is fast and requires little storage.
D. It is easy to read.

63. Which of the following is NOT a characteristic of ADA?

A. It was developed for use by the U. S. Defense Department in their search for a highly reliable language that could run on many different computers.
B. It is the most recent and most sophisticated of the procedure-oriented languages.
C. It was developed by Grace Murray Hopper.
D. It produces the very accurate results needed in defense, weather forecasting, and oil exploration.

64. Which of the following is NOT a characteristic of PL/1?

A. It was IBM's answer to languages with shortcomings such as FORTRAN and COBOL.

B. It combines commands found in both COBOL and FORTRAN as well as its own unique commands.

C. It is used for both scientific and business applications.

D. It can only be used on microcomputers.

65. Which of the following is NOT a characteristic of LOGO?

A. It was designed at MIT as a teaching tool.

B. It can only be used with a large compiler.

C. It enables adults and children to begin programming and communicating with the computer in a short time.

D. It helps the inexperienced user learn logic and programming.

66. Which of the following is NOT an advantage of using APL?

A. It is easy to read.

B. It has extremely powerful mathematical capabilities.

C. It is a fast language with fewer restrictions on data than any other language.

D. It handles tables of information easily which appeals to business application programmers.

67. Which of the following is NOT a disadvantage of using APL?

A. It requires a special keyboard and printer.

B. It has many restrictions on input and output.

C. Its file handling capabilities are limited.

D. It requires very large amounts of storage.

68. Which of the following is NOT an advantage of FORTH?

A. It has an excellent control of the computer because it is close to assembly language.

B. It is good for industrial process control applications.

C. It has unlimited vocabulary functions.

D. It is used by many industry leaders, such as IBM and Hewlett-Packard, for in-house development.

69. When selecting a computer language, which of the following should be considered?

A. Speed.
B. Purpose of the program.
C. Availability of languages on the system used.
D. All of the above.

70. Which of the following takes each instruction written in a high-level language and translates that instruction into machine code?

A. Microtranslator.
B. Microselector.
C. Interpreter.
D. Compiler.

71. Which of the following is NOT a reason for increased productivity increasing through the use of word processing packages?

A. Making corrections are easier than on a typewriter.
B. Typing speed increases.
C. Documents are stored on disks, which increases the time spent on filing paper documents.
D. Spell checkers and grammar checkers help with proofreading tasks.

72. Which of the following networks has terminals that work from one main computer?

A. Bus.
B. Ring.
C. Straight-line.
D. Star.

73. Which of the following databases would an expert system use that is a compilation of facts that were used to reach a conclusion?

A. Critical.
B. Dynamic.
C. Intelligent.
D. Static.

74. Which of the following is an example of office automation?

A. E-mail.
B. Bulletin boards.
C. Facsimile.
D. All of the above.

75. Which of the following is NOT a characteristic of a database?

A. A lot of redundancy exists.
B. It should be both effective and efficient.
C. Can be integrated.
D. Data can be accessed quickly.

MATCHING

A. Analog
B. Assembly language
C. ASCII
D. Batch processing
E. BCD
F. Compiler
G. Data communications
H. Data processing
I. Detail file
J. Digital
K. Direct access
L. EBCDIC
M. High-level language
N. Machine language
O. Master file
P. Program
Q. Sequential access
R. Transaction processing

1. Data retrieved from a file one record after another in a predetermined sequence.

2. It is an eight-bit code that accommodates as many as 256 different characters.

3. A computer language expressed in binary notation.

4. A series of instructions which directs the computer to perform a sequence of tasks that produces a desired output.

5. This code was designed to encode numeric information in a manner that would be easier than straight binary to convert into decimal.

6. Computers that measure continuously and are designed to translate physical conditions such as temperatures, pressure and voltage in large quantities.

7. A program that interprets computer statements written in a symbolic form and converts the statement to machine language instructions.

8. Replaced the binary code with symbolic names that were easier to remember.

9. The accumulation and processing of data as a group.

10. Processing data one record at a time.

11. The handling or manipulating of information to achieve a desired result.

12. It has a maximum character set of 128 codes; 0 through 127.

13. Data can be stored and retrieved in any order.

14. A computer that works by numbers and follows a set of instructions.

15. A computer language that uses English-like commands.

FILL IN THE BLANK

INSTRUCTIONS: Place the appropriate word or words in the blank.

____________________ 1. The ________ is generally magnetic tapes or magnetic disks on which data can be stored outside the computer.

____________________ 2. ________ copies are made of programs and data in case the original is damaged or destroyed.

____________________ 3. A ________ is a single letter, number, or special symbol.

____________________ 4. The ________ is where all the processing in the computer takes place.

____________________ 5. ________ is the transmission of data from one computer to another.

____________________ 6. A ________ is one piece of information, such as a name, address, or date.

____________________ 7. A ________ is a group of related records treated as a unit.

____________________ 8. A peripheral device is another term for ________.

____________________ 9. ________ is the raw data that need to be processed.

____________________ 10. A ________ is a computer language that uses English-like commands.

____________________ 11. A ________ is a measurement of a computer's memory that equals 1024 bytes.

____________________ 12. The ________ is one that contains relatively permanent records.

____________________ 13. A ________ is a list of options provided to the user by the computer program.

____________________ 14. A ________ is a device used in data communications to connect computers through phone lines.

____________________ 15. The ________ communicates the results of the processing to the user.

____________________ 16. When the facts are manipulated to produce results, they have been ________.

______________________ 17. A __________ is a person who designs, writes, tests, and implements the programs that process data.

______________________ 18. A __________ is a group of related fields.

______________________ 19. __________ is all instructions and information necessary to make the computer function.

______________________ 20. The __________ is the person using the computer.

ESSAY

1. Name and describe three language categories.

2. Briefly discuss the characteristics of each of the following:

   1) Supercomputers

   2) Mainframes

   3) Minicomputers

   4) Microcomputers

   5) Laptop computers

ANSWERS

True and False

1. T
2. F
3. T
4. F
5. T
6. T
7. F
8. F
9. F
10. T
11. T
12. T
13. F
14. T
15. F
16. T
17. F
18. T
19. F
20. T
21. T
22. T
23. F
24. T
25. F
26. F
27. T
28. T
29. T
30. T
31. F
32. F
33. T
34. T
35. T

Multiple Choice

1. B
2. C
3. D
4. A
5. A
6. C
7. D
8. B
9. A
10. B
11. B
12. C
13. A
14. C
15. C
16. D
17. A
18. A
19. C
20. D
21. B
22. B
23. A
24. C
25. A
26. D
27. B
28. C
29. B
30. A
31. D
32. D
33. C
34. B
35. A
36. B
37. A
38. D
39. C
40. B
41. A
42. D
43. C
44. C
45. A
46. D
47. B
48. C
49. D
50. A
51. C
52. B
53. C
54. A
55. B
56. D
57. C
58. B
59. C
60. A
61. B
62. D
63. C
64. D
65. B
66. A
67. B
68. C
69. D
70. C
71. C
72. D
73. B
74. D
75. A

Matching

1. Q
2. L
3. N
4. P
5. E
6. A
7. F
8. B
9. D
10. R
11. H
12. C
13. K
14. J
15. M

Fill in the Blank

1. Auxiliary storage
2. Backup
3. Character
4. CPU
5. Data communications
6. Field
7. File
8. Hardware
9. Input
10. High-level language
11. K
12. Master file
13. Menu
14. Modem
15. Output
16. Processed
17. Programmer
18. Record
19. Software
20. User

Essay

1. Any three of the following may be used. Evaluated to the satisfaction of the instructor.

    1) **Level**--low-level languages are those that require the programmer to have detailed knowledge of the computer hardware system. A high-level language is one that is fairly machine-independent in that little or no knowledge of specific computing machinery is required.

    2) **Purpose**--if a language can be used to solve a variety of problems, they are considered to be general-purpose. If the problems to be solved are specific, they are special-purpose languages.

    3) **Structure**--if it is relatively easy to implement the structure mechanisms, the language is considered to be structured.

    4) **Orientation**--when programmers indicate the procedures or algorithms in solving a problem, they use a procedure-oriented language. A programmer can specify what is to be accomplished in a problem-oriented language, leaving the development of procedures to the language.

    5) **Translation**--every language must be translated into zeros and ones, except for machine language. Translation is performed by another computer program called a language translator. The language translator uses the program prepared by the programmer as input and produces the machine language as output.

    6) **Interaction**--this means the programmer can conduct a dialogue with the computer--enter a line of code, have the computer test it, do an arithmetic computation, etc., in any order and at any time.

2. Evaluated to the satisfaction of the instructor.

COMPETENCY MATRIX OF TEST BANK QUESTIONS

SECTION I

SECTION I		QUESTION TYPES				
Unit	Comp.	T/F	MC	Match	Fill-in	Essay
2	1			All	All	
	2		1-8			
	3	1-5	9			
	4		10-13			
	5	6, 7	14-17			2
	6	8-13	18-48			
	7	14-30	49-70			1
	8	31-35	71-75			

Business Computer Applications I

Section II

WORD PROCESSING

TEST BANK

TRUE AND FALSE

1. Word processing involves collecting/creating, recording, manipulating, storing, and printing data to produce useful information.
2. Humans first used symbols to represent a thought or an idea.
3. The Chinese developed the movable type press in the early-to-mid 1400s.
4. The first patent for a typewriter was granted in 1714 to the Hooven Company.
5. Dedicated word processing systems were developed during the late 1940s.
6. Information processing applications are almost endless.
7. Text that will be published for projects such as catalogs, advertising circulars, reports, articles, and books is referred to as camera-ready.
8. Integrated word processing combines extensive information processing capability with other functions such as spreadsheets, graphics, and database management.
9. The central processing unit is the brains of the computer.
10. Floppy disks are the only external storage available.
11. A hard disk can be removed from a computer in the same way that a floppy can be removed.
12. Word processing packages allow users to modify portions of text.
13. Function keys allow the user to move the cursor and type anywhere in the text area on the screen.
14. Word wrap is a feature that automatically starts a word at the left margin of the next line if there is not enough room on the current line of type.
15. Formatting a document is one of the steps involved in the word processing cycle.

MULTIPLE CHOICE

1. Office productivity has increased because computerized procedures and equipment are used to _________ information.

   A. Sort.
   B. Create.
   C. Reproduce.
   D. All of the above.

2. Who developed the movable type press in the early-to-mid 1400s?

   A. Henry Mills
   B. Johann Gutenberg
   C. Christopher Sholes
   D. The Hooven Company

3. Who produced printed documents on paper in the fifth century?

   A. The Chinese.
   B. The Germans.
   C. The Japanese.
   D. The Russians.

4. Which of the following people produced the FIRST working model of a typewriter in 1867?

   A. Henry Mills
   B. Johann Gutenberg
   C. Christopher Sholes
   D. The Hooven Company

5. Which of the following people was granted the FIRST patent for a typewriter in 1714?

   A. Henry Mills
   B. Johann Gutenberg
   C. Christopher Sholes
   D. The Hooven Company

6. Who finally manufactured and marketed the typewriter in 1875?

   A. Apple.
   B. Remington and Sons.
   C. IBM.
   D. The Hooven Company.

7. Who introduced an automatic typewriter in 1918 that recorded keystrokes on an embossed cylinder for later playback?

   A. Apple.
   B. Remington and Sons.
   C. IBM.
   D. The Hooven Company.

8. When did the microcomputer make systems more flexible?

   A. The early 1950s.
   B. The late 1970s.
   C. The mid 1960s.
   D. The late 1980s.

9. Which of the following is NOT an example of a form document?

   A. Advertising circulars.
   B. Collection notices.
   C. Contracts.
   D. Sales letters.

10. Which of the following is NOT an example of text that is camera-ready?

   A. Catalogs.
   B. Books.
   C. Memos.
   D. Articles.

11. All of the following are basic components of word processing equipment EXCEPT:

   A. CPUs.
   B. Auxiliary storage.
   C. Output devices.
   D. Modems.

12. Which of the following is NOT an example of an input device?

   A. LAN.
   B. OCR.
   C. Keyboard.
   D. Mouse.

13. Which of the following is NOT an example of a storage disk?

   A. Floppy disk.
   B. Soft disk.
   C. Stiffy disk.
   D. Hard disk.

14. Which of the following disks is a rigid metal platter that is normally permanently fixed within a computer?

   A. Floppy disk.
   B. Soft disk.
   C. Stiffy disk.
   D. Hard disk.

15. Computer users can modify portions of text by all of the following EXCEPT:

   A. Making corrections without having to retype correct material.
   B. Changing left and right margins and tab stops.
   C. Beginning a new document each time a mistake is made.
   D. Copying or moving portions of the text.

16. The screen can indicate all of the following EXCEPT:

   A. Auxiliary storage.
   B. Text within the document.
   C. Left and right margins.
   D. Top and bottom of the page.

17. Which of the following are normally used to execute common commands such as underlining and printing?

    A. Special keys.
    B. Uppercase keys.
    C. Cursor control keys.
    D. Function keys.

18. Which of the following would be the FIRST step involved in the word processing cycle?

    A. Create a document.
    B. Print the document.
    C. Load the software program.
    D. Open a new document file.

19. Which of the following is a command used to write a document or a program onto a disk?

    A. Write.
    B. Save.
    C. Print.
    D. Recall.

20. Which of the following is a unit of storage for information on a disk that is identified by a unique name?

    A. File.
    B. Field.
    C. CPU.
    D. Record.

MATCHING 1

A. Ancillary storage
B. Backup
C. CPU
D. Cursor control keys
E. Directory
F. Floppy disk
G. Function keys
H. Hardcopy
I. Hard disk
J. Input device
K. Keyboarding
L. Load
M. Memory
N. Output device
O. RAM
P. ROM
Q. Storage components
R. Toggle switch

1. The place within the computer where information is stored.

2. A command key that turns a feature on or off.

3. A duplicate file.

4. Written, typed, or printed copy.

5. Entering characters into the memory of a word processor.

6. Special keys located on the keyboard that are used to execute common commands such as underlining and printing.

7. Equipment that accepts the electrical signals from the CPU such as a printer or a CRT screen.

8. Memory within the computer that is permanent and cannot be changed.

9. A list of file names located on the disk.

10. Memory within the computer that is changeable and reusable.

11. Transferring a program or file into the computer's memory.

12. Special keys located on the keyboard that allow the user to move the cursor and type anywhere in the text area on the screen.

13. Equipment used to enter data into the computer such as the keyboard, a mouse, a joystick, and an optical character reader.

14. A rigid metal platter that allows data to be recorded on the head of the platter and is permanently fixed within the computer.

15. Media such as floppy disks, hard disks, and magnetic tape that are used to store information.

MATCHING 2

A. Character
B. Command
C. Editing
D. Footer
E. Format
F. Hanging indent
G. Header
H. Highlight
I. Hyphenating
J. Insert
K. Justification
L. Orphan
M. Pitch
N. Proportional spacing
O. Ruler
P. Tab
Q. Typeover
R. Widow

1. Adding additional characters, words, spaces, or lines to existing text.
2. A single digit, letter, special character, or space.
3. The first line of text is not indented; however, every line after the first is indented.
4. The first line of a paragraph that is printed at the bottom of a page, before a page break.
5. A line of text that appears at the top of each page.
6. Number of characters per inch the printer will use.
7. A guide displayed on the screen by some word processors to assist in formatting.
8. Correcting errors and making changes.
9. Dividing words at the end of a line.
10. Adjusts the space occupied by each character according to size.
11. The way information is arranged on the screen or the page, using margin centering, and other printing features.
12. A condition in which characters are replaced, rather than inserted, when typed into existing text.
13. A line of text repeated at the bottom of each page.
14. Feature used to make all text flush right and left.
15. To emphasize text on the screen by displaying it in inverse video, or in a color different from the display's regular color.

FILL IN THE BLANK

INSTRUCTIONS: Place the appropriate word or words in the blank.

____________________ 1. A(n) __________ is a preset distance from the left margin to which the cursor can be moved with a single keystroke.

____________________ 2. A(n) __________ is an instruction given to the computer when you press a specific key or begin a specific word(s).

____________________ 3. A(n) __________ is the last line of a paragraph that is printed at the top of a page after a page break.

____________________ 4. __________ is reading copy to find and mark errors for correction.

____________________ 5. __________ is moving a portion of the text on the screen into view.

____________________ 6. __________ is balancing text or a heading between the margins.

____________________ 7. To __________ means to move in from the margin such as in the first line of a paragraph.

____________________ 8. To emphasize text on the screen by displaying it in inverse video, or in a color different from the display's regular color is known as __________.

____________________ 9. __________ storage is the secondary or external memory for storing information from the computer for later use.

____________________ 10. The brains of the computer is the __________.

____________________ 11. A(n) __________ is magnetic medium for recording (storing) information.

____________________ 12. A(n)__________ disk consists of a disk enclosed within a protective jacket that can be inserted into a diskette drive.

____________________ 13. Mathematicians, __________, and engineers use programs which allow the creation of symbols, such as the Greek alphabet, that are necessary in mathematics and statistics.

____________________ 14. The __________ is the most common input device for entering data.

____________________ 15. __________ word processing systems were developed during the late 1960s and the early 1970s.

ESSAY

1. Briefly explain the function of each of the following.

    1) Central processing unit

    2) Memory

    3) Input devices

    4) Output devices

    5) Auxiliary storage

2. List the steps involved in the word processing cycle.

    1)
    2)
    3)
    4)
    5)
    6)
    7)
    8)

ANSWERS

True and False

1. T
2. T
3. F
4. F
5. F
6. T
7. T
8. T
9. T
10. F
11. F
12. T
13. F
14. T
15. T

Multiple Choice

1. D
2. B
3. A
4. C
5. A
6. B
7. D
8. B
9. A
10. C
11. D
12. A
13. B
14. D
15. C
16. A
17. D
18. C
19. B
20. A

Matching 1

1. M
2. R
3. B
4. H
5. K
6. G
7. N
8. P
9. E
10. O
11. L
12. D
13. J
14. I
15. Q

Matching 2

1. J
2. A
3. F
4. R
5. G
6. M
7. O
8. C
9. I
10. N
11. E
12. Q
13. D
14. K
15. H

Fill in the Blank

1. Tab
2. Command
3. Orphan
4. Proofreading
5. Scrolling
6. Centering
7. Indent
8. Highlighting
9. Auxiliary
10. CPU
11. Disk
12. Floppy
13. Scientists
14. Keyboard
15. Dedicated

Essay

1. Evaluated to the satisfaction of the instructor. The following may be used as guidelines.

    1) **Central processing unit (CPU)**--the brains of the computer.

    2) **Memory**--the place within the computer where information is stored. Two types of memory are ROM (read-only memory), which is permanent, and RAM (random-access memory), which is changeable and reusable.

    3) **Input devices**--the keyboard is the most common input device for entering data. Each keystroke must be converted into electrical signals for the central processing unit. The mouse, joystick, and optical character reader are three additional types of input devices.

    4) **Output devices**--accept the electrical signals from the central processing unit. Printers and CRT screens are the two most common types of output devices.

    5) **Auxiliary storage**--the secondary or external memory for storing information from the computer for later use. Two forms of secondary storage are floppy disks and hard disks.

2. The steps involved in the word processing cycle are:

    1) Loading the software program.
    2) Opening a new document file.
    3) Creating a document.
    4) Editing a document.
    5) Formatting a document.
    6) Managing files, including saving and retrieving documents.
    7) Printing documents.
    8) Clearing the screen or quitting the program.

TRUE AND FALSE

1. The document cycle is another name for the word processing cycle.
2. The five steps of the document cycle are origination, processing, editing, saving, and distributing.
3. Longhand is the slowest method of originating a document.
4. Processing a document can be done only on a computer.
5. Electronic delivery systems have not yet played a major role in delivering documents.
6. Printing the document may be done on laser equipment only.
7. Word processing software and computers have made document production easier than using a typewriter.
8. The help function allows the user to get on-screen help.
9. Once a document has been formatted, it cannot be changed.
10. One of the advantages of word processing is the ability to create text easily and to change it.
11. Line spacing cannot be changed when using word processing software.
12. Page numbers can be printed only at the bottom of the document pages.
13. Page breaks can be controlled by the user or by the program.
14. Most word processing software do not have any type of advanced features.
15. One of the advanced features includes column settings.

MULTIPLE CHOICE

1. Which of the following is the most popular, but slowest method of originating a document?

    A. Composition at the keyboard.
    B. Dictation.
    C. Longhand.
    D. Voice processing.

2. The originator or author should consider the need to generate documents by all of the following criteria EXCEPT:

    A. The cost of producing the document.
    B. Decide the longest method to communicate information.
    C. Decide whether the document is really necessary.
    D. Decide the best method of communicating the idea.

3. Which of the following is NOT an input method?

    A. Laser printer.
    B. CIM.
    C. OCR.
    D. Voice-to-terminal.

4. Which of the following is the MOST common method of distribution?

    A. Courier services.
    B. Voice mail systems.
    C. Western Union.
    D. U. S. Postal Service.

5. Which of the following is NOT considered a formatting process?

    A. Changing files.
    B. Changing printing fonts.
    C. Changing margins.
    D. Changing line spacing.

6. Which of the following is a mode that allows characters to be added to a word or allows words to be added within a sentence?

    A. Deleting.
    B. Inserting.
    C. Reformatting.
    D. Replacing (typeover).

7. Which of the following is a mode that when used, the text does not move and the new text replaces the old?

    A. Deleting.
    B. Inserting.
    C. Reformatting.
    D. Replacing (typeover).

8. Which of the following is a mode that removes unwanted text from the existing document?

   A. Deleting.
   B. Inserting.
   C. Reformatting.
   D. Replacing (typeover).

9. Which of the following either automatically or manually allows text that has been edited to realign with the margins?

   A. Delete.
   B. Insert.
   C. Reformat.
   D. Replace (typeover).

10. Which of the following allows the user to specify the type of spacing between lines?

   A. Block operations.
   B. Copy.
   C. Line spacing.
   D. Moving or cut/paste.

11. Which of the following allows a specific section of text to have additional formatting or editing performed on it?

   A. Block operations.
   B. Copy.
   C. Line spacing.
   D. Moving or cut/paste.

12. Which of the following can be used when words, sentences, paragraphs, and entire pages of text are correct, but are in the wrong order?

   A. Block operations.
   B. Copy.
   C. Line spacing.
   D. Moving or cut/paste.

13. Which of the following is similar to a cut-and-paste operation, but the original version of the text is NOT affected by the operations?

   A. Block operations.
   B. Copy.
   C. Line spacing.
   D. Moving.

14. Which of the following makes it easy to locate specific text?

   A. Header.
   B. Footer.
   C. Replace.
   D. Search.

15. Which of the following allows for selected changes to be made to all or some occurrences of a particular character, word, or phrase?

   A. Header.
   B. Footer.
   C. Replace.
   D. Search.

16. Which of the following is normally printed at the top of a page?

    A. Header.
    B. Footer.
    C. Replace.
    D. Search.

17. Which of the following is normally printed at the bottom of a page?

    A. Header.
    B. Footer.
    C. Replace.
    D. Search.

18. Which of the following aligns text flush on the margins?

    A. Justification.
    B. Merge-printing.
    C. Pagination.
    D. Pitch.

19. Which of the following is an option of some programs that permits the printer type size to be changed as a document is being printed?

    A. Justification.
    B. Merge-printing.
    C. Page breaks.
    D. Pitch.

20. Which of the following controls where a page starts and stops?

    A. Justification.
    B. Merge-printing.
    C. Page breaks.
    D. Pitch.

21. Which of the following is used to print many copies of a form document with data integrated from another source?

    A. Justification.
    B. Merge-printing.
    C. Page breaks.
    D. Pitch.

22. Which of the following allows the display of two sections of the same file or separate files on the screen at the same time, so they can be compared, moved, or copied?

    A. Macros.
    B. Spell checker.
    C. Split screen/windows.
    D. Thesaurus.

23. Which of the following is used to find and correct misspelled words?

    A. Macros.
    B. Spell checker.
    C. Split screen/windows.
    D. Thesaurus.

24. Which of the following is used to suggest synonyms for a selected word?

    A. Macros.
    B. Spell checker.
    C. Split screen/windows.
    D. Thesaurus.

25. Which of the following is used to record and then manipulate a series of recorded keystrokes?

A. Macros.
B. Spell checker.
C. Split screen/windows.
D. Thesaurus.

26. Which of the following allows for two or more documents to be displayed on the screen at the same time?

A. Automatic file backup.
B. Automatic saving.
C. Style checkers.
D. Windows.

27. Which of the following checks the text for style and usage?

A. Automatic file backup.
B. Automatic saving.
C. Style checkers.
D. Windows.

28. Which of the following features moves the previously saved version to a backup file where it can be retrieved?

A. Automatic file backup.
B. Automatic saving.
C. Style checkers.
D. Windows.

29. Which of the following prevents losing files unintentionally when the user quits the program?

A. Automatic file backup.
B. Automatic saving.
C. Style checkers.
D. Windows.

30. Which of the following allows for calculations by the operator?

A. Column mode.
B. Outlines.
C. Pagination.
D. Math/calculator.

FILL IN THE BLANK

INSTRUCTIONS: Place the appropriate word or words in the blank.

____________________ 1. __________ is the computer's temporary memory.

____________________ 2. __________ is the computer's permanent memory.

____________________ 3. __________ machines are used to send exact copies of documents to another location.

____________________ 4. Depending on the software being used, the __________ function may be made available by topic, function, or level.

____________________ 5. Some software provides help through its basic structure because it is menu-driven or __________-driven.

____________________ 6. __________ stops are used to indent text as well as align tables and lists.

____________________ 7. __________ settings are preset by each particular software package.

____________________ 8. __________ is a means of displaying what is on the screen to hardcopy.

____________________ 9. __________ are used to record and then manipulate a series of recorded keystrokes.

____________________ 10. Printing copies of a document may be done on duplicating machines such as an offset, __________, or phototypeset.

ESSAY

1. Discuss each of the following steps of the document production cycle.

   1) Origination

   2) Processing

   3) Editing

   4) Saving the document

   5) Distribution

2. Explain three advanced features of your word processing software.

   1)

   2)

   3)

ACTIVITY

INSTRUCTIONS: Write a memo to your instructor about the advantages and disadvantages of your specific word processing software. Use the current date and "Word Processing Packages" as the subject. Make the memo both attractive and creative by using formatting functions.

ANSWERS

True and False

1. F
2. T
3. T
4. F
5. F
6. F
7. T
8. T
9. F
10. T
11. F
12. F
13. T
14. F
15. T

Multiple Choice

1. C
2. B
3. A
4. D
5. A
6. B
7. D
8. A
9. C
10. C
11. A
12. D
13. B
14. D
15. C
16. A
17. B
18. A
19. D
20. C
21. B
22. C
23. B
24. D
25. A
26. D
27. C
28. A
29. B
30. D

Fill in the Blank

1. RAM
2. ROM
3. Facsimile
4. Help
5. Command
6. Tab
7. Default
8. Printing
9. Macros
10. Photocopier

Essay

1. The five steps of the document production cycle are:
    1) **Origination--**the process of converting raw facts and data into usable information.
    2) **Processing--**the process of converting the information from dictated to handwritten form to finished document.
    3) **Editing--**the process of inserting, deleting, and/or correcting text.
    4) **Saving the document--**the process of transferring the document from the temporary memory of the computer to permanent storage.
    5) **Distribution--**the final step in the document production cycle; communication of information.
2. Evaluated to the satisfaction of the instructor.

Activity

Evaluated to the satisfaction of the instructor.

COMPETENCY MATRIX
OF TEST BANK QUESTIONS
SECTION II

SECTION II		QUESTION TYPES						
Unit	**Comp.**	**T/F**	**MC**	**Match 1**	**Match 2**	**Fill-in**	**Essay**	**Activity**
1	1			All	All	1-9		
	2	2-8	1-10			13, 15		
	3	9	11, 12			10, 14	1	
	4	10, 11	13, 14			11, 12		
	5	12-15	15-20				2	
2	1	1, 2	1, 2			1, 2	1	
	2	2-6	3, 4			3, 10		
	3	7-9	5-8			4-9	2	
	4	10-15	9-13					
	5		14, 15					
	6		16-30					X

Business Computer Applications I

Section III

ELECTRONIC SPREADSHEETS

TEST BANK

TRUE AND FALSE

1. Accountants do NOT use spreadsheets.

2. Spreadsheets allow for neat, organized entry of numerical information.

3. Spreadsheets are limited to 30 rows.

4. The spreadsheet is often thought of primarily as a decision-making tool.

5. The ability to change one figure and let the computer totally recalculate a set of results means that decisions can be tried in advance on the computer, without spending any money.

6. VisiCalc was the first spreadsheet program designed for the IBM computer.

7. The all-time best-selling spreadsheet program is LOTUS 1-2-3.

8. Dan Bricklin invented VisiCalc.

9. Robert Frankston invented LOTUS 1-2-3.

10. Each cell in the spreadsheet actually represents a unit of the computer's internal memory.

11. When the spreadsheet program is in "ready" mode, data can be entered or a command can be given.

12. Spreadsheet programs will NOT allow a user to move a whole page.

13. A numeric value can be centered or left-justified.

14. There is a formatting option that will permit formulas to be displayed in the cell instead of the calculation results.

15. Two ways of controlling the spreadsheet appearance are changing the size of the cells, and giving format specifications for numeric and formula cells.

16. Ranges CANNOT be named.

17. The function keys are the same for all spreadsheet programs.

18. Trigonometric functions may be performed by some spreadsheet programs.

19. The entire worksheet must be printed because specific portions cannot be printed.

20. Macros are available on most spreadsheet programs.

21. Headers and footers can be repeated on each page if the program has this capability.

22. Macros are complicated and difficult to use.

23. Most spreadsheet programs are designed to run on specific computers.

24. LOTUS 1-2-3 is an integrated package.

25. When choosing software, needs should be analyzed, including size requirements and necessary functions.

MULTIPLE CHOICE

1. All of the following are advantages of using spreadsheets EXCEPT:

    A. "What-if" questions can be easily answered.

    B. The spreadsheet may be 30 entries long and wide.

    C. Mathematical formulas, figures, and labels may be entered into spreadsheets.

    D. Refiguring of the results of all formulas wherever a number is changed normally can be accomplished with one keystroke.

2. Which of the following spreadsheet examples would NOT normally be used as a planning tool?

    A. Sales reports.

    B. Forecasting business cycles.

    C. Trend analysis.

    D. Financial models.

3. Which of the following spreadsheet examples would NOT normally be used as a decision making tool?

    A. Compare and prepare bids.

    B. Evaluate the results of operational changes.

    C. Compare performance of different branches.

    D. Projecting cash flow.

4. Which of the following spreadsheet examples would NOT normally be used as a recordkeeping tool?

    A. Accounting records.

    B. Sales reports.

    C. Trend analysis.

    D. Production data.

5. Which of the following spreadsheet examples would NOT normally be used as a selling tool or to convince others?

    A. Analyzing the performance of products.

    B. Displaying results graphically.

    C. Summarizing important facts.

    D. Producing figures in which people can have confidence.

6. Which of the following was the first spreadsheet developed for the Apple II computer?

    A. LOTUS 1-2-3.

    B. VisiCalc.

    C. Desktop Plan.

    D. Symphony.

7. Which of the following was the first integrated package?

A. LOTUS 1-2-3.
B. VisiCalc.
C. Desktop Plan.
D. Symphony.

8. Which of the following took the place of VisiCalc for the Apple II?

A. LOTUS 1-2-3.
B. VisiCalc.
C. Desktop Plan.
D. AppleWorks.

9. Which of the following is NOT a data type for a spreadsheet?

A. Labels.
B. Numbers.
C. Characters.
D. Formulas.

10. Which of the following is a FALSE statement about labels?

A. Paragraphs of text can be labels.
B. Labels are normally entered left-justified, but they can also be centered, or right-justified.
C. When data is entered into a cell, it is recognized as a label if it begins with a letter, blank space, or most special characters.
D. Once identified as a label, the cell can be used for calculation or other numeric functions.

11. Which of the following is a FALSE statement about numbers?

A. Any data that is to be used in calculating is considered numeric.
B. It is identified by the program through the use of any special character.
C. Numbers are automatically right-justified.
D. A number cannot be centered or left-justified.

12. Which of the following is a FALSE statement about formulas?

A. Formulas are treated as labels.
B. The expression can be made up of any combination of numbers, cell addresses, and arithmetic operators or functions.
C. A plus sign or left parenthesis can be used to indicate that the entry is not a label.
D. There is a formatting option that will permit the formula to be displayed in the cell, in place of calculation results.

13. Which of the following format specifications displays all numbers in standard dollars and cents form?

    A. Comma.
    B. Currency.
    C. Fixed decimal places.
    D. Percentage.

14. Which of the following format specifications allows the user to state how many places numbers will be carried?

    A. Comma.
    B. Currency.
    C. Fixed decimal places.
    D. Percentage.

15. Which of the following format specifications does NOT allow large numbers to be grouped in a readable format?

    A. Comma.
    B. Currency.
    C. Leaders.
    D. Percentage.

16. Which of the following format specifications will multiply the value by 100 and then display the proper sign?

    A. Comma.
    B. Currency.
    C. Fixed decimal places.
    D. Percentage.

17. Which of the following finds the whole number value of a cell?

    A. ABS.
    B. INT.
    C. MOD.
    D. SQRT.

18. Which of the following finds the integer remainder in division?

    A. ABS.
    B. INT.
    C. MOD.
    D. SQRT.

19. Which of the following finds the square root?

    A. ABS.
    B. INT.
    C. MOD.
    D. SQRT.

20. Which of the following finds the absolute value?

    A. ABS.
    B. INT.
    C. MOD.
    D. SQRT.

21. Which of the following chooses a random number between 0 and 10?

    A. EXP.
    B. LOG.
    C. RAND.
    D. ROUND.

22. Which of the following rounds to a given number of places?

    A. EXP.
    B. LOG.
    C. RAND.
    D. ROUND.

23. Which of the following finds the Log base 10?

    A. EXP.
    B. LOG.
    C. RAND.
    D. ROUND.

24. Which of the following is the exponentiation function?

    A. EXP.
    B. LOG.
    C. RAND.
    D. ROUND.

25. Which of the following is the Natural Log?

    A. AVG.
    B. LN.
    C. PI.
    D. SUM.

26. Which of the following has a value of 3.14159?

    A. AVG.
    B. LN.
    C. PI.
    D. SUM.

27. Which of the following totals any group of cells?

    A. AVG.
    B. LN.
    C. PI.
    D. SUM.

28. Which of the following averages a set of values?

    A. AVG.
    B. LN.
    C. PI.
    D. SUM.

29. Which of the following finds out how many cells have values?

    A. COUNT.
    B. MAX.
    C. MIN.
    D. STD.

1009

30. Which of the following finds the highest number in a group of values?

A. COUNT.
B. MAX.
C. MIN.
D. STD.

31. Which of the following finds the lowest number in a group of values?

A. COUNT.
B. MAX.
C. MIN.
D. STD.

32. Which of the following finds standard deviation for statistical information?

A. COUNT.
B. MAX.
C. MIN.
D. STD.

33. Which of the following finds the variance for statistical information?

A. FV.
B. NPV.
C. PV.
D. VAR.

34. Which of the following calculates the present value?

A. FV.
B. NPV.
C. PV.
D. VAR.

35. Which of the following calculates the net present value?

A. FV.
B. NPV.
C. PV.
D. VAR.

36. Which of the following calculates the future value?

A. FV.
B. NPV.
C. PV.
D. VAR.

37. Which of the following calculates the internal rate of return?

A. DATE.
B. IRR.
C. PMT.
D. TODAY or NOW.

38. Which of the following indicates the required payment per period?

A. DATE.
B. IRR.
C. PMT.
D. TODAY or NOW.

39. Which of the following displays the current date?

- A. DATE.
- B. IRR.
- C. PMT.
- D. TODAY or NOW.

40. Which of the following displays the date and the time?

- A. DATE.
- B. IRR.
- C. PMT.
- D. TODAY or NOW.

41. Which of the following is a FALSE statement about macros?

- A. Macros are complicated and difficult to use.
- B. Steps that are repeated can be saved as a sequence of commands, and then be given a name.
- C. Macros can be as easy to learn as other commands.
- D. The secret is to make a detailed list of the keystrokes that are to be included, before typing them in as a macro.

42. Which of the following is a FALSE statement about printing a spreadsheet?

- A. Compressed print may be used.
- B. Borders can be printed.
- C. The print screen command will not work with a spreadsheet package.
- D. Margins can be reset.

43. Which of the following is the MOST popular integrated software for the Apple II computer?

- A. InterApple.
- B. LOTUS 1-2-3.
- C. AppleWorks.
- D. Symphony.

44. Which of the following is the MOST popular integrated software for the IBM and compatibles?

- A. InterApple.
- B. LOTUS 1-2-3.
- C. AppleWorks.
- D. Symphony.

45. When choosing spreadsheet software, which of the following would NOT be a consideration?

- A. Reliability.
- B. Word processing capabilities.
- C. Ease of use.
- D. Cost.

MATCHING

A. Absolute
B. Address
C. Cell
D. Format
E. Formula
F. Global
G. Label
H. Macro
I. Menu
J. Range
K. Relative
L. Scroll
M. Template
N. What-if model
O. Window
P. Wait mode

1. Refers to the rules for how data will be stored and displayed.

2. A programming command that gives a name to a sequence of commands.

3. The method by which commands are usually accessed.

4. The location of a cell, identified by its row and column.

5. To move the worksheet up, down, right, or left, to display different portions on the screen.

6. The intersection of a row and column, where data are entered.

7. A rectangular block of cells that is identified or highlighted.

8. Refers to a command that applies to the entire worksheet, rather than a cell or limited range.

9. A condition that exists while the computer is busy with an operation, and no command will be accepted until the computer is finished.

10. A reusable model of a spreadsheet that has been created with labels, formatting, and formulas, but without variable data.

11. Data in a spreadsheet cell that normally contains alphanumeric rather than numeric data.

12. Describes a cell address in relation to another address rather than by its coordinates.

13. The portion or portions of the worksheet that are visible on the screen.

14. Calculation rules that allow the computer to do mathematics.

15. A technique for experimenting by using a worksheet to change values or data to see what the result would be.

1012

FILL IN THE BLANK

INSTRUCTIONS: Place the appropriate word or words in the blank.

__________ 1. The name "_________" comes from the term accountants use to describe the large worksheets on which they organize their figures and categories.

__________ 2. One of the advantages of using a spreadsheet is the end product does not have any messy _________ or cross outs.

__________ 3. _________ assistance continues to be the most valuable reason for using a spreadsheet because it allows users to do things that could not be done without it.

__________ 4. Dan Bricklin and Robert _________ invented Desktop Plan for the Apple II computer.

__________ 5. When the first character has been typed during data entry, if it is a letter or certain special characters, the program goes into _________ mode.

__________ 6. When the first typed character is a digit or sign, the program is in _________ mode.

__________ 7. A _________ or a column normally can be added at any time.

__________ 8. _________ functions such as SIN, COS, and TAN are available with some software.

__________ 9. PV, NPV, FV, IRR, and PMT are examples of _________ functions.

__________ 10. The _________ operator IF allows conditional operations.

ESSAY

1. Describe the general structure of electronic spreadsheets. Include in your answer cells, functions, storage, and modes.

2. List and explain five capabilities of the electronic spreadsheet you are using.

1014

ANSWERS

True and False

1. F
2. T
3. F
4. T
5. T
6. F
7. T
8. T
9. F
10. T
11. T
12. F
13. F
14. T
15. T
16. F
17. F
18. T
19. F
20. T
21. T
22. F
23. T
24. T
25. T

Multiple Choice

1. B
2. A
3. D
4. C
5. A
6. B
7. A
8. D
9. C
10. D
11. B
12. A
13. B
14. C
15. A
16. D
17. B
18. C
19. D
20. A
21. C
22. D
23. B
24. A
25. B
26. C
27. D
28. A
29. A
30. B
31. C
32. D
33. D
34. C
35. B
36. A
37. B
38. C
39. A
40. D
41. A
42. C
43. C
44. B
45. B

Matching

1. D
2. H
3. I
4. B
5. L
6. C
7. J
8. F
9. P
10. M
11. G
12. K
13. O
14. E
15. N

Fill in the Blank

1. Spreadsheet
2. Erasures
3. Decision-making
4. Frankston
5. Label
6. Value
7. Row
8. Trigonometric
9. Financial
10. Logical

1015

Essay

1. Evaluated to the satisfaction of the instructor; however, the following may be used as guidelines.

   To the user, a spreadsheet appears as a table of cells, some of which are displayed on the computer's screen while the program is in operation.

   1) Each cell actually represents a unit of the computer's internal memory.
   2) Each of the functions and operations that are performed cause the computer to make changes in the contents of one or more memory locations.
   3) The amount of data that can be stored is limited because the data in the cells, the instructions for carrying out the commands, the commands themselves, and the index and instructions that go with it are all in memory at once.
   4) There are different modes during operation of a spreadsheet program.

2. Evaluated to the satisfaction of the instructor.

1016

TRUE AND FALSE

1. Spreadsheet programs do NOT need to be set up for the particular hardware configuration on which it will be used.
2. If the work to be done is a new application, the first step is to plan the layout of the data.
3. The problem at-hand does NOT determine what will work best.
4. Data may be entered vertically or horizontally.
5. Templates CANNOT be used for spreadsheet programs.
6. All of the advanced commands take a long time to learn, and they create more work for the user.
7. Even when you do NOT understand the mathematical basis for a function, the spreadsheet functions will still perform the task.
8. The @RAND function is used in games.
9. Before creating a macro, determine what steps and commands the macro will execute.
10. To use the macro, first be sure that all the data and formulas needed have been entered.

1017

MULTIPLE CHOICE

1. Which of the following is a step in designing the format for a spreadsheet?

   A. Key in any titles or comments, and the headings.
   B. Lock in the titles, if desired, and save the program.
   C. Decide what column widths and formats will be needed.
   D. Enter the formulas that are to be used to calculate the results.

2. All of the following are steps that are performed when entering and manipulating data EXCEPT:

   A. Copy the formulas that will be used in other places in the spreadsheet.
   B. Determine how many rows and columns will be needed.
   C. Check to see that the results are correct.
   D. Enter the data into the cells.

3. Which of the following is NOT a characteristic of a template?

   A. All cells are filled.
   B. It is actually a model that has the labels and the formulas in place.
   C. It should prevent the user from modifying its formulas.
   D. It is protected by hiding the worksheet's calculations from view.

4. Which of the following is a FALSE statement about templates?

   A. Templates may not fit every need, but they can be adapted.
   B. Templates are very expensive.
   C. Some templates are public domain software.
   D. Hundreds of complex templates have been designed and saved.

5. Which of the following is NOT a statistical function?

   A. @END.
   B. @VAR.
   C. @AVG.
   D. @STD.

6. Which of the following is NOT a financial function?

   A. @FV.
   B. @IRR
   C. @MAX.
   D. @NPV.

7. Which of the following is NOT a mathematical function?

   A. @EXP.
   B. @SUM.
   C. @RAND.
   D. @FIRST.

8. What is the FIRST step of creating a macro?

   A. Choose any place on the worksheet to store the macro commands.
   B. Key each keystroke in any sequence.
   C. Determine what steps and commands the macro will execute.
   D. Key in the macro.

9. Which of the following is a FALSE statement about macros?

   A. Step through the keystrokes manually, carefully writing down each keystroke.
   B. Hold down the Alt key, followed by the letter of the macro name to execute the macro.
   C. Give a one letter name to the range of cells containing the macro commands.
   D. A macro can be executed one step at a time for testing and checking.

10. Which of the following statements about instruction manuals is TRUE?

    A. Manuals are always vague and hard to understand.
    B. Always consult the manual for exact procedures.
    C. Very few manuals are available.
    D. None of the above.

1019

FILL IN THE BLANK

INSTRUCTIONS: Place the appropriate word or words in the blank.

____________________ 1. If the program disk for __________ is not set up for the correct monitor, the program will lock up the entire system.

____________________ 2. Spreadsheets are normally __________-driven.

____________________ 3. If the work to be done is a new application, the first step is to plan the __________ of the data.

____________________ 4. The best procedure sometimes is to enter all the data before doing any __________, copying or moving.

____________________ 5. When analyzing statistics, @STD and __________ are important.

____________________ 6. Examples of __________ functions are @FV, @NPV, @IRR and @PMT.

____________________ 7. The advanced __________ functions are designed to make it simple to do all the most needed calculations.

____________________ 8. Examples of __________ functions are @EXP and @RAND.

____________________ 9. When creating a macro, one of the steps includes keying in each __________ in the correct sequence.

____________________ 10. When preparing to execute a macro, hold down the __________ key, followed by the letter of the macro name.

1020

ESSAY

1. Explain the steps involved in designing the format for a new spreadsheet application.

2. Explain how to create and then use a simple macro for a spreadsheet.

1021

ACTIVITY

INSTRUCTIONS: Create a spreadsheet from the following information. Be sure to use a title and column headings.

Roaring Rollers is a retail store that sells bikes, skates, and skateboards. Eight salespeople are currently employed. The following information summarizes their sales for the current month.

Salesperson	Total Sales	Commission Rate	Monthly Salary
Henry Gomez	$1400	8%	$ 850
Martha Ling	$1000	8%	$ 700
Ramon Sanchez	$1800	10%	$1000
Sarah Nabors	$1300	9%	$ 800
Mark Fisher	$2200	12%	$1050
Jamie Hopper	$2500	10%	$1000
Frank Gonzales	$3000	12%	$1200
Carmen Smith	$2800	10%	$1100

You will need to calculate each salesperson's commission and then calculate each person's gross pay. You will need column totals for the total sales, monthly commission, monthly salary and the gross pay.

Make the appearance of the spreadsheet as attractive as possible. Print a copy of the spreadsheet as it is displayed and another copy that prints the cell formulas.

Create a bar graph of gross pay after completing the spreadsheet.

1022

ANSWERS

True and False

1. F
2. T
3. F
4. T
5. F
6. F
7. T
8. T
9. T
10. T

Multiple Choice

1. C
2. B
3. A
4. B
5. A
6. C
7. D
8. C
9. D
10. B

Fill in the Blank

1. LOTUS 1-2-3
2. Menu
3. Layout
4. Calculations
5. @VAR
6. Financial
7. Built-in
8. Mathematical
9. Keystroke
10. ALT

Essay

1. Evaluated to the satisfaction of the instructor. The following may be used as a guideline.

    1) Plan the layout of the data.

    2) Identify the data that is to be used, and determine how many rows and columns will be needed.

    3) Choose column and row headings to best fit the data and the column sizes chosen.

    4) Type in any titles or comments, and the headings.

    5) Lock in the titles, if desired, and save the program.

    6) The spreadsheet is now ready for data entry. If it later turns out that column sizes or sequencing need improvement, be sure to save the layout again after making changes.

2. Evaluated to the satisfaction of the instructor. The following may be used as guidelines.

   1) Always consult the software reference manual for exact procedures first.

   2) Determine what steps and commands the macro will execute.

   3) Step through the steps manually, one at a time, carefully writing down each keystroke, as it is pressed, including the ENTER key.

   4) For each command that is represented by a non-printable character, such as the BACKSPACE, the function keys, and the HOME key, consult the list in the manual for the code to use. Substitute these codes for the keystrokes on the list.

   5) Choose an unused area of the worksheet to store the macro commands.

   6) Carefully type in each keystroke in correct sequence. This can be done with one command to a cell or several to a cell, but they must be in order and must be in adjacent rows in the same column.

   7) Give a one letter name to the range of cells containing the macro commands. (Only the first cell of the macro must be in the range.)

   8) To use the macro, first be sure that all the data and formulas needed have been entered and be sure the pointer is at the correct place to begin the execution of the macro.

   9) Enter command mode and hold down the Alt key, followed by the letter of the macro name. If everything has been done correctly, the macro will execute. A macro can be executed one step at a time for testing and checking.

1024

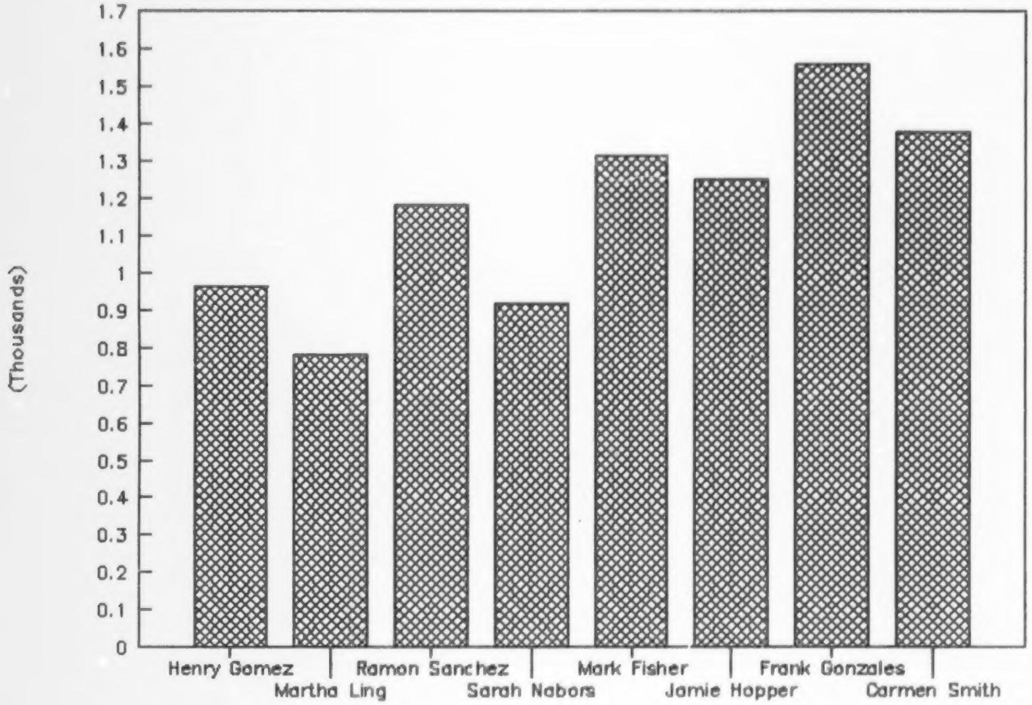
Activity

Roaring Rollers
Monthly Sales/Salary Report
Current Date

Salesperson	Total Sales	Commission Rate	Monthly Commission	Monthly Salary	Gross Pay
Henry Gomez	$1,400	0.08	$112	$850	$962
Martha Ling	$1,000	0.08	$80	$700	$780
Ramon Sanchez	$1,800	0.1	$180	$1,000	$1,180
Sarah Nabors	$1,300	0.09	$117	$800	$917
Mark Fisher	$2,200	0.12	$264	$1,050	$1,314
Jamie Hopper	$2,500	0.1	$250	$1,000	$1,250
Frank Gonzales	$3,000	0.12	$360	$1,200	$1,560
Carmen Smith	$2,800	0.1	$280	$1,100	$1,380
	$16,000		$1,643	$7,700	$9,343

The cell formulas are to be evaluated to the satisfaction of the instructor. The following may be used as a guideline.

```
D1: [W15] '    Roaring Rollers
D2: [W15] 'Monthly Sales/Salary Report
D3: [W15] '     Current Date
C5: ^Total
D5: [W15] ^Commission
E5: [W12] ^Monthly
F5: ^Monthly
G5: ^Gross
A6: [W20] 'Salesperson
C6: ^Sales
D6: [W15] ^Rate
E6: [W12] ^Commission
F6: ^Salary
G6: ^Pay
A7: [W20] \-
B7: \-
C7: \-
D7: [W15] \-
E7: [W12] \-
F7: \-
G7: \-
A8: [W20] 'Henry Gomez
C8: (C0) 1400
D8: [W15] 0.08
E8: (C0) [W12] +C8*D8
F8: (C0) 850
G8: (C0) +E8+F8
A9: [W20] 'Martha Ling
C9: (C0) 1000
D9: [W15] 0.08
E9: (C0) [W12] +C9*D9
F9: (C0) 700
G9: (C0) +E9+F9
A10: [W20] 'Ramon Sanchez
C10: (C0) 1800
D10: [W15] 0.1
E10: (C0) [W12] +C10*D10
F10: (C0) 1000
G10: (C0) +E10+F10
A11: [W20] 'Sarah Nabors
C11: (C0) 1300
D11: [W15] 0.09
E11: (C0) [W12] +C11*D11
F11: (C0) 800
G11: (C0) +E11+F11
A12: [W20] 'Mark Fisher
C12: (C0) 2200
D12: [W15] 0.12
E12: (C0) [W12] +C12*D12
F12: (C0) 1050
G12: (C0) +E12+F12
A13: [W20] 'Jamie Hopper
C13: (C0) 2500
D13: [W15] 0.1
E13: (C0) [W12] +C13*D13
F13: (C0) 1000
G13: (C0) +E13+F13
A14: [W20] 'Frank Gonzales
C14: (C0) 3000
D14: [W15] 0.12
E14: (C0) [W12] +C14*D14
F14: (C0) 1200
G14: (C0) +E14+F14
A15: [W20] 'Carmen Smith
C15: (C0) 2800
D15: [W15] 0.1
E15: (C0) [W12] +C15*D15
F15: (C0) 1100
G15: (C0) +E15+F15
A16: [W20] \-
B16: \-
C16: \-
D16: [W15] \-
E16: [W12] \-
F16: \-
G16: \-
C17: (C0) @SUM(C8..C15)
E17: (C0) [W12] @SUM(E15..E8)
F17: (C0) @SUM(F15..F8)
G17: (C0) @SUM(G15..G8)
```


1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
(Thousands)
Henry Gomez
Martha Ling
Ramon Sanchez
Sarah Nabors
Mark Fisher
Jamie Hopper
Frank Gonzales
Carmen Smith

1028

COMPETENCY MATRIX OF TEST BANK QUESTIONS

SECTION III

SECTION III		QUESTION TYPES					
Unit	**Comp.**	**T/F**	**MC**	**Match**	**Fill-in**	**Essay**	**Activity**
1	1			All			
	2	1-4, 6-9	1-8		1-4	1	
	3	5, 10-22	9-42		5-10	2	
	4	23-25	43-45				
2	1	1-3, 5	1, 3, 4		1-3	1	X
	2	4	2		4		X
	3	9, 10	8-10		9, 10	2	X
	4	6-8	5-7		5-8		X
	5						X

Business Computer Applications I

Section IV

DATABASE MANAGEMENT

TEST BANK

TRUE AND FALSE

1. Databases were designed to increase repetitive work and decrease accuracy and efficiency of data management.
2. By entering data just once into a database, and verifying its accuracy immediately, almost all cases of inaccurate data can be eliminated.
3. Advantages of a database management system include improved access to data and integrated files allow an overview of the user's business.
4. One of the disadvantages of a database management system is having the data in a centralized location which allows for less security.
5. The network database structure has rigid relationships that allow only one way to access data.
6. The relational database structure is composed of data tables that are logically arranged in rows and columns.
7. AppleWorks and LOTUS 1-2-3 use a hierarchical database structure.
8. The hierarchical database structure is very flexible.
9. The network database structure accesses data the fastest.
10. The relational database structure accesses data the slowest.
11. A DBMS is actually software that can be purchased to help manage the data in the database.
12. Most DBMS programs have very limited capabilities.
13. Once data is entered into a database, the data can NEVER be deleted.
14. Most DBMS programs now have some form of query capability.
15. While all database packages have the same basic purposes, there is a wide difference in the way they are implemented.

1031

MULTIPLE CHOICE

1. Which of the following is NOT a concept of database management?

   A. Decreases repetitive work.
   B. Increases accuracy.
   C. Decreases centralized security.
   D. Increases efficiency.

2. Which of the following is a disadvantage of database management systems?

   A. Multiple users can work with the database from different locations.
   B. Only one user can access a file (for change) at one time.
   C. Updating of a record need only be done once.
   D. Integrated files allow an overview of the user's business and improve access to data.

3. Which of the following is an advantage of database management systems?

   A. All occurrences of a record can be deleted at one time.
   B. Privacy can be compromised.
   C. Errors, if not corrected, are perpetuated.
   D. The owner of the data can lose control over it.

4. Which of the following is a typical database management application?

   A. Accounting.
   B. Medical.
   C. Construction.
   D. All of the above.

5. Which of the following does NOT describe the hierarchical database structure?

   A. Data are stored something like a family tree in a top-down order, according to established relationships.
   B. All access begins at top-level items and proceeds downward.
   C. It is composed of data tables that are arranged in rows and columns.
   D. Fields must be accessed through a key field in a "parent" record.

6. Which of the following does NOT describe the network database structure?

   A. Fields must be accessed through a key field in a "parent" record.
   B. Data are accessed through key fields, but there are additional pathways, instead of a single one, to access certain data.
   C. It uses a structure similar to that of the hierarchical structure, except that access is possible at multiple levels.
   D. Data items can have both top-down and bottom-up relationships.

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7. Which of the following does NOT describe the relational database structure?

   A. There can be several data tables within a database.
   B. Each data table is built separately, but can have fields in common.
   C. It is a traditional-type file structure that consists of records and fields.
   D. Data are accessed only through key fields.

8. The fastest database structure to access data is:

   A. Hierarchical.
   B. DBMS.
   C. Network.
   D. Relational.

9. The slowest database structure to access data is:

   A. Hierarchical.
   B. DBMS.
   C. Network.
   D. Relational.

10. The least flexible database structure is:

    A. Hierarchical.
    B. DBMS.
    C. Network.
    D. Relational.

11. The most flexible database structure is:

    A. Hierarchical.
    B. DBMS.
    C. Network.
    D. Relational.

12. Which of the following capabilities is used to load data into a file through entries to a format or schema?

    A. Add or enter.
    B. Delete.
    C. Sort or arrange.
    D. Update or edit.

13. Which of the following capabilities is used to change records that already are part of a file?

    A. Add or enter.
    B. Delete.
    C. Sort or arrange.
    D. Update or edit.

14. Which of the following capabilities is used to remove obsolete records from the database?

    A. Add or enter.
    B. Delete.
    C. Sort or arrange.
    D. Update or edit.

15. Which of the following capabilities organizes records within a single file in sequence?

A. Add or enter.
B. Delete.
C. Sort or arrange.
D. Update or edit.

16. Which of the following capabilities is used to find records within a file?

A. Project.
B. Report.
C. Search or index.
D. Select.

17. Which of the following capabilities copies complete records or rows into a working file, leaving the existing field undisturbed?

A. Project.
B. Report.
C. Search or index.
D. Select.

18. Which of the following capabilities is similar to select, EXCEPT that selection and copying are completed for columns of data items, rather than rows?

A. Project.
B. Report.
C. Search or index.
D. Columnar.

19. Which of the following capabilities rearranges the information and formats it for distribution?

A. Project.
B. Report.
C. Search or index.
D. Select.

20. Which of the following would NOT be a capacity consideration when choosing a database software package?

A. Maximum number of records.
B. Maximum size of a record.
C. Limitations on arrangement of data.
D. Ability to support multiple disk files.

21. Which of the following would NOT be an input format consideration when choosing a database software package?

A. Ease of editing.
B. Total capacity of database in bytes.
C. Availability of a separate screen for entering records.
D. Ability to duplicate fields from one record to the next.

22. Which of the following would NOT be a report format consideration when choosing a database software package?

    A. Ability to have the input screen designed by the user.
    B. Ability to duplicate mailing labels from one record to the next.
    C. Maximum report size.
    D. Limitations on arrangement of data.

23. Which of the following would be a sorting consideration when choosing a database software package?

    A. Limitations on fields that can be used.
    B. Number of levels allowed.
    C. Both A and B.
    D. None of the above.

24. Which of the following would be a reorganizing consideration when choosing a database software package?

    A. Ability to add fields.
    B. Ability to change field sizes.
    C. Ability to add indexes.
    D. All of the above.

25. Which of the following would NOT be an ease of use consideration when choosing a database software package?

    A. Data fields.
    B. Help subsystem.
    C. Adequacy of manuals.
    D. Menus.

MATCHING

A. Attribute
B. DBMS
C. Default
D. Encrypt
E. Field
F. File
G. Index
H. Key field
I. Logical
J. Network
K. Prompt
L. Query
M. Record
N. Relation
O. Relational
P. Schema
Q. Truncate

1. A symbol or word to inform the user that a response is needed.
2. An individual data item in a record.
3. A connection established between multiple files within a database.
4. A descriptive characteristic of hardware, such as the monitor.
5. A request to the database for specific data.
6. The automatic value of an option if the user does not specify a choice.
7. A group of related fields treated as a unit.
8. A file that relates a key field to a record number.
9. To encode data so that it is unreadable by unauthorized persons.
10. Software that allows the user to access and manipulate data stored in a database.
11. A traditional-type file structure of a database.
12. A field that can be used for sorting or indexing.
13. A map of the logical structure of a database.
14. A set of data records.
15. Dropping or cutting off characters in a field to make it a certain length.

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ESSAY

1. Explain five benefits of using a database management system.

   1)

   2)

   3)

   4)

   5)

2. Describe the three types of database structures.

   1)

   2)

   3)

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ANSWERS

True and False

1. F
2. T
3. T
4. F
5. F
6. T
7. F
8. F
9. F
10. T
11. T
12. F
13. F
14. T
15. T

Multiple Choice

1. C
2. B
3. A
4. D
5. C
6. A
7. D
8. A
9. D
10. A
11. D
12. A
13. D
14. B
15. C
16. C
17. D
18. A
19. B
20. C
21. B
22. A
23. C
24. D
25. A

Matching

1. K
2. E
3. N
4. A
5. L
6. C
7. M
8. G
9. D
10. B
11. O
12. H
13. P
14. F
15. Q

Essay

1. Evaluated to the satisfaction of the instructor. The following may be used as guidelines.

    1) If new needs arise, the data is already there.

    2) Updating of a record need only be done once.

    3) All occurrences of a record can be deleted at one time.

    4) Managed correctly, the system is reliable.

    5) Multiple users can work with the database from different locations.

    6) Integrated files allow an overview of the user's business and improve access to data.

    7) Having the data in a centralized location allows better security.

2. Evaluated to the satisfaction of the instructor. The following may be used as a guideline.

   Hierarchical:

   1) Data are stored something like a family tree in a top-down order, according to established relationships.

   2) All access begins at top-level items and proceeds downward. Fields must be accessed through a key field in a "parent" record.

   3) It is the fastest to access data, but it is the least flexible, because it has limited ability to sort and rearrange data.

   Network:

   1) It uses a structure similar to that of the hierarchical structure, except that access is possible at multiple levels.

   2) Data are accessed through key fields, but there are additional pathways, instead of a single one, to access certain data.

   3) Data items can have both top-down and bottom-up relationships with a network structure.

   4) This structure is more flexible than the hierarchical structure and some relationships can be made, but it has slower access.

   Relational:

   1) It is composed of tables of data, logically arranged in row and columns. There can be several of these tables within a database.

   2) These tables are each built separately, but can have fields in common. The common fields can be used to relate data from one file to that in another so that a report could be made up of data from two or more files.

   3) Some software use a relational structure and provide excellent speed. Because they can only operate while residing entirely in memory, the size of the database is limited by the amount of main memory.

   4) It is the most flexible, easiest to adapt to new uses, and more relationships are possible, but it has the slowest access.

TRUE AND FALSE

1. System specifications are designed to guide a user when creating a database.
2. Both input and output forms can be designed when using a database.
3. The database portion of LOTUS 1-2-3 requires all data to be entered in spreadsheet format.
4. Reports are always classified as lists.
5. Lists are forms that are designed to print data from an individual record.
6. Most databases allow for range formatting, but do not allow for field formatting.
7. Starting up a new database is usually accomplished through menu commands.
8. When entering data into a database, the data are always entered file by file.
9. Searching for specific records is accomplished through commands such as FIND, SEEK, or LOCATE.
10. Some software permits data from other programs to be imported into the database.

MULTIPLE CHOICE

1. Which of the following is NOT a system specification for a database?

   A. Calculation capability.
   B. Data structure definition.
   C. Problem definition.
   D. System flow description.

2. Which of the following is a description of results to be attained?

   A. Calculation capability.
   B. Data structure definition.
   C. Problem definition.
   D. System flow description.

3. Which of the following provides a simple system flowchart as a basis for translating the definition statement into a series of events and elements that provide the computer solution?

   A. Calculation capability.
   B. Data structure definition.
   C. Problem definition.
   D. System flow description.

4. Which of the following identifies each field name, data type, and the number of characters to be included in all the fields that make up individual records?

   A. Calculation capability.
   B. Data structure definition.
   C. Problem definition.
   D. System flow description.

5. Which of the following examines documents that will contain source data?

   A. Input description.
   B. Output description.
   C. Processing description.
   D. Test data.

6. Which of the following does the user need to list the internal functions that will be applied to files or input records to produce either updated files or output?

   A. Input description.
   B. Output description.
   C. Processing description.
   D. Test data.

7. Which of the following depicts formats for presenting information on the report documents?

   A. Input description.
   B. Output description.
   C. Processing description.
   D. Test data.

8. Which of the following is a set of data to be processed as a means of determining whether the system will do the job for which it is intended?

   A. Input description.
   B. Output description.
   C. Processing description.
   D. Test data.

9. Which of the following is used to key in data and should be similar to what is on the screen?

A. Logical groupings.
B. Prompts.
C. Source documents.
D. Spacing.

10. Which of the following is used to make it easier to enter data if related fields are continuous on the form?

A. Logical groupings.
B. Prompts.
C. Source documents.
D. Spacing.

11. Which of the following is used for making sure the screen is well balanced and not crowded or cluttered?

A. Logical groupings.
B. Prompts.
C. Source documents.
D. Spacing.

12. Which of the following should clearly and briefly indicate what data is expected?

A. Logical groupings.
B. Prompts.
C. Source documents.
D. Spacing.

13. Which of the following is a FALSE statement about a report form that is classified as a label?

A. It is designed to print data from an individual record.
B. It can be a single line of print or many lines.
C. The arrangement of data on the labels is dependent upon the program.
D. Many programs allow the user to specify several labels to be printed side by side.

14. Which of the following is a FALSE statement about a report form that is classified as a list?

A. It can also be called page format.
B. Fields are selected by the user.
C. Numerous options exist.
D. Headings cannot be printed.

15. Which of the following is a TRUE statement about field formatting?

A. The maximum and minimum field length and whether a field may be left blank are specified.
B. Data can be classified into several types.
C. At the time some fields are named during input design, information must also be given.
D. All of the above.

16. Which of the following does NOT play a part in information management applications, but it still must be coordinated?

    A. The disk drive.
    B. The program.
    C. The printer.
    D. The paper size.

17. Which of the following is NOT a logical operator?

    A. OR.
    B. NONE.
    C. AND.
    D. NOT.

18. Which of the following is NOT a characteristic of creating report summaries?

    A. The forms are stored by name on the disk.
    B. If a new report is requested, a new report can be designed.
    C. All fields must be included on the forms.
    D. Any number of output forms can be designed for the same database.

19. Which of the following is NOT a characteristic of a database search?

    A. A search criterion must be chronological.
    B. A search criterion can be exact.
    C. The general procedure is to list the criteria that will identify the desired record(s) as part of the command.
    D. Normally three or even more criteria may be listed.

20. Which of the following is NOT a characteristic of importing or exporting in a database?

    A. Unless the program being used specifically lists the other program for import or export, the results are unpredictable.
    B. The reference manual or menu options usually list the names of programs from which data can be imported.
    C. The records of the receiving file must always be designed with the same fields as the sending file.
    D. Data can be exported.

FILL IN THE BLANK

INSTRUCTIONS: **Place the appropriate word or words in the blank.**

____________________ 1. Error traps are normally built into a program and if the user attempts to type invalid data, a _________ will be displayed.

____________________ 2. Data will not be accepted if it is longer than the field and most programs will display an error message while others will _________.

____________________ 3. Data can be classified into several types such as _________ or numeric options.

____________________ 4. The _________ being used controls what options are available to the designer.

____________________ 5. Single width labels are referred to as _________.

____________________ 6. _________ width labels are referred to as four up.

____________________ 7. It is common to use _________ forms with data reports and particularly with label printing.

____________________ 8. The search can stop with the first record that meets the criteria, or continue searching for all _________.

____________________ 9. _________ options may be selected earlier and saved with the form.

____________________ 10. The reference manual or _________ options usually list the names of programs from which data can be imported.

ESSAY

1. Explain the system specifications when creating a database.

2. Discuss the two types of reports.

Labels

Lists

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ACTIVITY

INSTRUCTIONS: Create a database that includes all the students in your class and each person's birthdate. Print out the database in alphabetical order. Print out the database again by birthdate. Give both printouts to your instructor.

ANSWERS

True and False

1. T
2. T
3. T
4. F
5. F
6. F
7. T
8. F
9. T
10. T

Multiple Choice

1. A
2. C
3. D
4. B
5. A
6. C
7. B
8. D
9. C
10. A
11. D
12. B
13. C
14. D
15. D
16. A
17. B
18. C
19. A
20. C

Fill in the Blank

1. Message
2. Truncate
3. Alphanumeric
4. Software
5. One up
6. Quadruple
7. Special
8. Occurrences
9. Printer
10. Menu

Essay

1. Evaluated to the satisfaction of the instructor. The following may be used as guidelines.

   1) **Problem definition--**is a description of results to be attained. The description should be complete enough to cover all expectations.

   2) **System flow description--**provides a simple system flowchart as a basis for translating the definition statement into a series of events and elements that provide the computer solution.

   3) **Data structure definition--**identifies each field name, data type, and the number of characters to be included in all the fields that make up individual records.

   4) **Input description--**examines documents that will contain source data. The best way to specify input is to work with copies or layouts of all source documents.

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5) **Processing description--**in simple terms, the user should list the processing functions (calculations) that will be applied to files or input records to produce either updated files or output.

6) **Output description--**depicts formats for presenting information on output documents. Reports and other output can be displayed on screen, or printed on a printer.

7) **Test data--**a set of data to be processed as a means of determining whether the system will do the job for which it is intended. The test data should contain both valid and erroneous or unacceptable items. If the test data set is designed properly, the valid transactions will test a system to its full capabilities and the invalid items will ensure that the system can deal with entries that require rejection.

2. Evaluated to the satisfaction of the instructor. The following may be used as a guideline.

Labels--a form that is designed to print data from an individual record.

1) A label can be a single line of print or many lines.

2) Many programs also allow the user to specify several labels to be printed side by side.

3) The arrangement of data on the labels is entirely up to the user.

Lists--also called page format, this form consists of headings at the top of the page followed by a print line for each record to be included.

1) Fields are selected and arranged by the user.

2) There are numerous options such as page length and width, printing of page numbers, and line spacing.

Activity

Evaluated to the satisfaction of the instructor.

COMPETENCY MATRIX OF TEST BANK QUESTIONS

SECTION IV

SECTION IV		QUESTION TYPES					
Unit	Comp.	T/F	MC	Match	Fill-in	Essay	Activity
1	1			All			
	2	1-4	1-3			1	
	3	12-14	4, 12-19				
	4	5-10	5-11			2	
	5	11, 15	20-25				
2	1	1	1-4		1-3	1	X
	2	2-7	5-18		4-7	2	X
	3	8, 9					X
	4		19		8		X
	5	10	20		9, 10		X

Business Computer Applications I

Section V

COMPUTER COMMUNICATION TOOLS

TEST BANK

TRUE AND FALSE

1. Minicomputers and modems were introduced in the early 1960s.
2. Telecommunication applications are being used in a wide variety of businesses.
3. Modems convert tones into data for sending to the receiving computer.
4. The 300-baud modem is the newest modem available.
5. The 2400-baud modem is becoming more popular and less expensive.
6. The internal modem is currently being developed.
7. All modems are direct-connect.
8. One of the purposes of communications software is to act as a bridge between the computer and the modem.
9. Do not use a printer when on-line with communication software.
10. Text capture is the simplest type of downloading.
11. Data communication devices are organized to transmit data from one computer to another, such as from digital to analog.
12. Voice mail is best suited to the rapid exchange of long and detailed messages.
13. Voice mail can be used to leave "things to do" notes for employees.
14. Real-time teleconferencing is one of the slowest growing network services.
15. One of the most important criteria for teleconferencing is that those involved must be interested.
16. All videoconferences are two-way.
17. Networking is the joining of two or more computers to share information or peripherals.
18. The purpose behind networking, or any multiuser system, is sharing information and work distribution.
19. Any amateur can set up a network.
20. LAN users ALWAYS work on-line and can NEVER work on files off-line.

MULTIPLE CHOICE

1. When was the use of AM, FM, UHF, and shortwave researched and developed?

   A. Vietnam War.
   B. World War II.
   C. World War I.
   D. Korean War.

2. When was the integrated chip used in the first computer-controlled PBX?

   A. 1960s.
   B. 1980s.
   C. 1940s.
   D. 1920s.

3. What year were personal computers introduced?

   A. 1968.
   B. 1959.
   C. 1982.
   D. 1975.

4. What year were Local Area Networks introduced?

   A. 1980.
   B. 1965.
   C. 1986.
   D. 1972.

5. Which of the following would NOT be a telecommunication application for banking?

   A. Automatic ticketing machines.
   B. Home banking to pay bills and to inquire about account status.
   C. Access to credit reports.
   D. Automated teller machines.

6. Which of the following would NOT be a telecommunication application for travel?

   A. Airline seat assignments.
   B. All types of reservations for travel-related businesses.
   C. Automatic ticketing machines.
   D. Automatic inventory and reordering controls.

7. Which of the following would NOT be a telecommunication application for retailing?

   A. Automatic checkout.
   B. Environmental control.
   C. Shopping at home.
   D. Credit checks and signature recognition.

8. Which of the following modem speeds is the oldest and slowest?

   A. 1000-baud.
   B. 500-baud.
   C. 300-baud.
   D. 1200-baud.

9. Which of the following modem speeds is presently the MOST common type used?

A. 1000-baud.
B. 500-baud.
C. 300-baud.
D. 1200-baud.

10. Which of the following modem speeds is becoming more popular and less expensive?

A. 4800-baud.
B. 2400-baud.
C. 300-baud.
D. 1500-baud.

11. Which of the following is NOT a characteristic of the 300-baud modem?

A. It transmits at the speed of 30 characters per second.
B. A double-spaced page of text takes approximately 1 1/2 minutes to transmit.
C. It is the most expensive.
D. Both A and B.

12. Which of the following is NOT a characteristic of the 1200-baud modem?

A. It is the slowest modem.
B. A double-spaced page of text takes approximately 20 seconds to transmit.
C. It transmits at the speed of 120 characters per second.
D. Both B and C.

13. Which of the following is NOT a characteristic of the 2400-baud modem?

A. Services are still lacking.
B. It can operate only at 300- to 2400-baud rates.
C. It transmits 240 characters per second.
D. A double-spaced page of text takes approximately ten seconds to transmit.

14. Which of the following modems is the most common and works with several types of computers at the same time?

A. Acoustic.
B. Direct-connect.
C. External.
D. Internal.

15. Which of the following modems is a printed circuit board which plugs directly into one of the expansion slots of a computer and takes up very little space?

A. Acoustic.
B. Direct-connect.
C. External.
D. Internal.

16. Which of the following modems was one of the FIRST used and uses rubber cups to hold the telephone handset?

    A. Acoustic.
    B. Direct-connect.
    C. External.
    D. Internal.

17. Which of the following modems is the fastest and most reliable?

    A. Acoustic.
    B. Direct-connect.
    C. External.
    D. Internal.

18. Which of the following temporarily stores data that appear on the screen, which can be reviewed, printed, or saved on disk?

    A. Capture buffer.
    B. Text editor.
    C. Macro.
    D. Terminal emulation.

19. Which of the following is a series of keystrokes, saved as a file, which can be invoked by depressing one or two keys?

    A. Capture buffer.
    B. Text editor.
    C. Macro.
    D. Terminal emulation.

20. Which of the following is a handy tool for composing a brief message?

    A. Capture buffer.
    B. Text editor.
    C. Macro.
    D. Terminal emulation.

21. Which of the following allows the computer to perform like a terminal extension of a mainframe?

    A. Chat mode.
    B. Text editor.
    C. Macro.
    D. Terminal emulation.

22. Which of the following splits the screen to allow "type-talking"?

    A. Chat mode.
    B. Text editor.
    C. Macro.
    D. Terminal emulation.

23. What is the Xmodem utility used for?

    A. Translating.
    B. Error-checking.
    C. Downloading to storage medium.
    D. Information flow control.

24. Which of the following has NOT been a significant advancement of voice messaging?

    A. It takes more memory to store less amount of digitized voice.
    B. The cost of information storage has decreased.
    C. Software has matured.
    D. The cost of the processors and other hardware has decreased.

25. Which of the following is NOT a feature of voice mail?

    A. Scan.
    B. Edit.
    C. Security.
    D. Forwarding.

26. Which of the following is a disadvantage of using voice mail?

    A. Confidentiality can be breached.
    B. Reduces uncertainty.
    C. Available 24 hours a day, 7 days a week.
    D. Messages are no longer lost or missed.

27. Which of the following is a FALSE statement about real-time teleconferencing?

    A. It is available through some multiuser bulletin board systems and most general information services.
    B. It is one of the fastest growing network services.
    C. A well-attended conference channel can fill your screen with messages so quickly that it is hard to pick them up.
    D. It is highly structured.

28. Which of the following is NOT a characteristic of a one-way videoconference?

    A. It is used on a regular basis, and can be used for many events.
    B. It may be seen by a large number of people.
    C. Presenters are heard at the primary location but are not seen.
    D. It supports satellite transmission.

29. Which of the following is NOT a characteristic of two-way videoconferences?

    A. It is used by only very large companies because of its implementation difficulties.
    B. It needs a room dedicated for this purpose only.
    C. It is used to measure the reactions of people or their level of interest.
    D. It is very cheap and the demand is unlimited.

30. Which of the following is NOT a level of teleconferencing?

    A. Read-only conference.
    B. Random access conference.
    C. Open number conference.
    D. Closed conference.

31. Which of the following is NOT a characteristic of a file or print server?

A. Even though the software is obtained from the file server, each computer must have a floppy drive.
B. Files can be quickly saved, and data can be transferred between files within the "file cabinet."
C. The computer holds the network software, and storage is available to all the stations on the network.
D. Some network file servers can do other processing while the network is in use.

32. Which of the following is a FALSE statement about setup procedures for a network?

A. Even with a small LAN, there is much technical knowledge required.
B. There are network boards and software, packaged with installation instructions, costing only a few hundred dollars for up to four microcomputers.
C. Setting up a network is a job for trained professionals.
D. Even after a network is installed, starting up a session is very difficult.

33. Which of the following is NOT a network configuration?

A. Ring.
B. Tree.
C. Star.
D. Circle.

34. Which of the following is an advantage of using networks?

A. If the file server is down, then the whole network is down.
B. The ability to access and share data files.
C. The extra cost and complication of installing the network hardware and software.
D. Obtaining networkable software is frequently challenging.

35. By the year 2000, approximately how many workers will be mainly working at home?

A. 20%.
B. 50%.
C. 5%.
D. 35%.

MATCHING 1

A. Acoustic coupler
B. Baud rate
C. Common carrier
D. Download
E. File
F. Front-end processor
G. Handshaking
H. Modem
I. Modulation
J. Password
K. Protocol
L. Soft copy
M. Switched line
N. Terminal
O. Time-sharing
P. Token-ring
Q. UNIX
R. Upload

1. To send a data file from one computer to another.

2. Conversion of a signal from digital to analog.

3. A measure of the number of bits per second transmitted.

4. A computer connected to a mainframe for the purpose of controlling data input and output.

5. Simultaneous access to a shared central computer facility by many users.

6. A process in which the receiving computer sends a signal to tell the sending computer that it is ready to receive data.

7. A set of rules for exchange of information between computers in a communication system.

8. To receive a data file from another computer.

9. A type of modem which uses a telephone handset to connect the phone line to the computer.

10. A line such as a normal telephone line.

11. A type of ring network in which messages need not pass to adjacent stations.

12. Information appearing on a video screen or monitor.

13. Coded identification required to access some bulletin boards and information services.

14. In telegraphic communication, this refers to the transmitting of a telegraphic message.

15. An organization, such as the telephone company, that is authorized by the FCC to offer communication services.

MATCHING 2

A. Audioteleconference
B. Bulletin board
C. Channel
D. E-mail
E. Fiber optics
F. File server
G. Full-duplex
H. Half-duplex
I. Host computer
J. Microwave transmission
K. Multistar
L. Satellite transmission
M. Telecommunications
N. Teleconference
O. Teleprocessing
P. Value-added network
Q. Video teleconference
R. Voice messaging

1. Network services provided through common carriers.
2. A network configuration in which mainframes, each with its own star network, are connected.
3. The connection between the sender and the receiver.
4. A communication protocol which enables transmission of data two-ways at the same time.
5. The electronic transmission of information, whether it is voice or data.
6. The file server in a local network, or the mainframe in other networks.
7. The transmission of data for electronic storage and subsequent retrieval.
8. A computer with software and storage dedicated to communicating with other computers over telephone lines.
9. The exchange of data over cables and telephone lines between minicomputers and mainframes.
10. A means of transmission using glass fiber.
11. A conference that, through the use of a bridge, allows from three people to hundreds to converse from different locations.
12. A communication protocol which allows transmission of data in only one direction at a time.
13. The use of closed-circuit television to allow meetings without travel.
14. The host computer in a network that coordinates communication and has central storage capability available to the network.
15. A method of using the telephone system to receive messages which are stored by computer in the form of recorded, spoken words rather than soft copy.

FILL IN THE BLANK

INSTRUCTIONS: Place the appropriate word or words in the blank.

__________ 1. _________ is a popular operating system for microcomputers used in a multistation configuration.

__________ 2. A(n) _________ network is one in which the workstations are connected to each other without a central host.

__________ 3. _________ is a system that has a central computer, but some processing is done at remote sites.

__________ 4. A network configuration in which all stations are connected by one path to the central computer, but the paths are not connected to each other is _________.

__________ 5. A(n) _________ is an input-output device that is used to access data from a computer.

__________ 6. A(n) _________ connects the computer to the telephone system.

__________ 7. A(n) _________ is limited to one room, building, or complex.

__________ 8. If each terminal or workstation is connected directly to the host, it is said to have a(n) _________ line configuration.

__________ 9. A(n) _________ network configuration is one in which a central computer is directly connected to each terminal.

__________ 10. _________ systems send images, as in videoconferences, in forms such as diagrams, graphs, pictures, and drawings.

ESSAY

1. List and describe the functions and components of transmission systems.

   1)

   2)

   3)

   4)

2. Describe three types of network configurations.

   1)

   2)

   3)

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ANSWERS

True and False

1. F
2. T
3. T
4. F
5. T
6. F
7. F
8. T
9. F
10. T
11. T
12. F
13. T
14. F
15. T
16. F
17. T
18. T
19. F
20. F

Multiple Choice

1. B
2. A
3. D
4. C
5. A
6. D
7. B
8. C
9. D
10. B
11. C
12. A
13. B
14. C
15. D
16. A
17. B
18. A
19. C
20. B
21. D
22. A
23. B
24. A
25. D
26. A
27. D
28. A
29. D
30. B
31. A
32. D
33. D
34. B
35. A

Matching 1

1. R
2. I
3. B
4. F
5. O
6. G
7. K
8. D
9. A
10. M
11. P
12. L
13. J
14. E
15. C

Matching 2

1. P
2. K
3. C
4. G
5. M
6. I
7. D
8. B
9. O
10. E
11. A
12. H
13. Q
14. F
15. R

Fill in the Blank

1. UNIX
2. Ring
3. Distributed data processing
4. Hierarchical
5. Terminal
6. Modem
7. LAN
8. Point-to-point
9. Star
10. Facsimile

Essay

1. Evaluated to the satisfaction of the instructor. The following may be used as guidelines.

    1) Data communication devices are organized to transmit data from one computer to another, such as from digital to analog.

    2) Facsimile systems send images, as in videoconferences, in forms such as diagrams, graphs, pictures, and drawings.

    3) Electronic mail systems transmit messages to a designated electronic mailbox.

    4) Voice communication involves transmission of spoken words through telephone networks.

2. Evaluated to the satisfaction of the instructor. The following may be used as a guideline.

    1) The star topology has clusters of personal computers in a star shape around a central network server.

    2) The ring network connects components in a single, closed loop.

    3) The tree or bus network is a single bidirectional communication link.

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TRUE AND FALSE

1. One reason for using graphics and pictures is that they communicate information faster.
2. The primary use of graphics in business is to interpret data from spreadsheets.
3. Presentation graphics are seldom used in business.
4. Stacked bar graphs are easy to understand because the segments within the bars have common baselines.
5. The graphic design concept is "less is more."
6. Background color is not important.
7. The most common use of computer graphics is to summarize extended reports for business and applications.
8. Computer animation is being widely used in the movie industry.
9. The two types of mice that are currently in use are mechanical and optical.
10. CGA monitors are the best to use for computer graphics.
11. Hardcopy output devices include printers, plotters, and film recorders that physically print their data on a piece of paper or film.
12. Laser printers are very different from personal photocopiers.
13. Postscript laser printers are very small and lightweight and are often used as portable printers.
14. A math coprocessor is a dedicated microprocessor that is especially designed to handle floating point calculations.
15. A graphics coprocessor can dramatically increase speed and performance for high-level CAD graphics applications.

MULTIPLE CHOICE

1. All of the following are TRUE about how people see information EXCEPT:

   A. Most of us rely on our sight for information.
   B. Many parts of a picture are processed at once.
   C. Words can be processed faster than pictures.
   D. We remember what we see longer and with more accuracy than what we read.

2. Which of the following is NOT a reason why graphics and pictures should be used?

   A. Our minds are slower than our eyes.
   B. They are a faster way to communicate.
   C. Business communications must be interpreted quickly.
   D. The average person only speaks about 100 words per minute.

3. Which of the following is NOT an advanced spreadsheet program with graphics capabilities?

   A. Lotus 1-2-3.
   B. Tornado.
   C. Excel.
   D. Quattro.

4. Which of the following is NOT a characteristic of free-drawing graphics?

   A. Paint programs can be used to enhance graphs from spreadsheets.
   B. They are very good for creating word charts.
   C. Most programs are very expensive.
   D. Use of free-drawing graphics in business is growing quickly.

5. Which of the following basic components of graphics design is used to plot relative points on a plane?

   A. Cartesian coordinate.
   B. Plotting.
   C. X-axis.
   D. Y-axis.

6. Which of the following basic components of graphics design assigns a point a position according to the value it represents in the x- and y-scales?

   A. Cartesian coordinate.
   B. Plotting.
   C. X-axis.
   D. Y-axis.

7. Which of the following basic components of graphics design is the horizontal line along the bottom of the graph that usually represents units of time?

A. Cartesian coordinate.
B. Plotting.
C. X-axis.
D. Y-axis.

8. Which of the following basic components of graphics design is the vertical line of the graph that usually represents different values of items being measured?

A. Cartesian coordinate.
B. Plotting.
C. X-axis.
D. Y-axis.

9. Which of the following basic components of graphics design are units of measure, smaller than grid lines, that are used to plot points?

A. Icons.
B. Tags.
C. Tick marks.
D. X/Y-axes titles.

10. Which of the following basic components of graphics design run horizontally or vertically from the tick marks and are used to mark units of measurement?

A. Grid lines.
B. Tags.
C. Plots.
D. X/Y-axes titles.

11. Which of the following basic components of graphics design are words, numbers, or symbols that give meaning to the tick marks?

A. Grid lines.
B. Tags.
C. Plots.
D. X/Y-axes titles.

12. Which of the following basic components of graphics design are words that identify the values plotted on the x- or y-axis?

A. Grid lines.
B. Tags.
C. Tick marks.
D. X/Y-axes titles.

13. Which of the following basic components of graphics design are symbols that are used to represent a particular value plotted on a line or scattergraph?

A. Icons.
B. Legend.
C. Hatch pattern.
D. Title.

14. Which of the following basic components of graphics design is usually attached below the graph to explain the significance of an icon, color, hatch pattern, or symbol?

A. Heading.
B. Legend.
C. Scattergraph.
D. Title.

15. Which of the following is inserted above the graph to identify the overall concept that the graph conveys?

A. Icons.
B. Legend.
C. Scattergraph.
D. Title.

16. Which of the following is a series of plotted points that demonstrate an idea?

A. Icons.
B. Legend.
C. Scattergraph.
D. Title.

17. Which of the following graphs is most commonly used to plot a certain value against time?

A. Area graph.
B. Column or bar graph.
C. Gantt chart.
D. Line graph.

18. Which of the following graphs helps the viewer to compare visually the values of two plotted lines?

A. Area graph.
B. Column or bar graph.
C. Gantt chart.
D. Line graph.

19. Which of the following graphs is the most common type of graph used in business?

A. Area graph.
B. Column or bar graph.
C. Gantt chart.
D. Line graph.

20. Which of the following graphs is a variation of the horizontal bar graph that is very effective for time schedules?

A. Area graph.
B. Column or bar graph.
C. Gantt chart.
D. Line graph.

21. Which of the following graphs usually is used to represent parts of a whole expressed in percentages?

A. Clustered bar graph.
B. Exploded pie graph.
C. Pie graph.
D. Stacked bar graph.

22. Which of the following graphs is a graph in which a section can be pulled away to give added emphasis?

A. Clustered bar graph.
B. Exploded pie graph.
C. Pie graph.
D. Stacked bar graph.

23. Which of the following graphs is used to define a particular value against time and the parts of a whole?

   A. Clustered bar graph.
   B. Exploded pie graph.
   C. Pie graph.
   D. Stacked bar graph.

24. Which of the following graphs is a better way to demonstrate information than a stacked bar graph?

   A. Clustered bar graph.
   B. Exploded pie graph.
   C. Pie graph.
   D. Line graph.

25. Which of the following enhances a drawing by giving the drawing extra depth, width, and height?

   A. Bullets.
   B. Text charts.
   C. Three-dimensional graphics.
   D. Typesize.

26. Which of the following is a group of words used during the course of presentation to express a point?

   A. Bullets.
   B. Text charts.
   C. Three-dimensional graphics.
   D. Typesize.

27. Which of the following are symbols that are used beside a line to give emphasis?

   A. Bullets.
   B. Text charts.
   C. Three-dimensional graphics.
   D. Typesize.

28. Which of the following measures the size of characters in points?

   A. Bullets.
   B. Font.
   C. Three-dimensional graphics.
   D. Typesize.

29. Which of the following refers to a specific style of lettering?

   A. Bullets.
   B. Font.
   C. Three-dimensional graphics.
   D. Typesize.

30. Which of the following is NOT a guideline to use for bar and pie graphs?

   A. If all the bars represent the same thing, use the same color.
   B. Use different colors for the title and bars or sections in the graph.
   C. Use a bright color for the most important section.
   D. Use as many fonts as possible.

31. Which of the following is NOT a guideline to use for text charts?

A. Use as many colors as possible.
B. Use three or fewer typesizes.
C. Use only three colors, and two are usually enough.
D. Use three or fewer fonts.

32. Which of the following is NOT an advantage to printing charts in black and white rather than color?

A. Photocopies may be easily reproduced and distributed to the participants in the presentation.
B. They are not effective.
C. If the chart is used as an overhead transparency, the person giving the presentation may color directly on the copy with an opaque marker.
D. They are less expensive to print and reproduce than are color copies.

33. Which of the following is a computer graphics application?

A. Computer-simulated testing.
B. Animation.
C. Statistical analysis.
D. All of the above.

34. Which of the following tracks the desktop movement by measuring the movements of a rolling ball that is drawn across the desk surface?

A. Digitizing tablet.
B. Light pen.
C. Mechanical mouse.
D. Optical mouse.

35. Which of the following tracks movement by changes in the position of a puck in relation to an underlying coordinate grid in the pad?

A. Digitizing tablet.
B. Light pen.
C. Mechanical mouse.
D. Optical mouse.

36. Which of the following utilizes a special screen that is light-sensitive?

A. Digitizing tablet.
B. Light pen.
C. Mechanical mouse.
D. Optical mouse.

37. Which of the following is the most accurate input device for entering coordinates and graphic data?

A. Digitizing tablet.
B. Light pen.
C. Mechanical mouse.
D. Optical mouse.

38. Which of the following monitors provides the highest resolution that is currently available?

    A. CGA.
    B. EGA.
    C. Hercules monochrome.
    D. VGA.

39. Which of the following monitors has the lowest resolution?

    A. CGA.
    B. EGA.
    C. Hercules monochrome.
    D. VGA.

40. Which of the following monitors will show at least 16 out of 64 colors?

    A. CGA.
    B. EGA.
    C. Hercules monochrome.
    D. VGA.

MATCHING 1

A. Absolute coordinates
B. Bit-mapped graphic
C. Cartesian coordinate
D. Computer graphics
E. Fatbits
F. Flatbed plotter
G. Graphics coprocessor
H. Icon
I. Legend
J. Mechanical mice
K. Object-selection process
L. Paint program
M. Polar coordinate
N. Presentation graphic
O. Relative coordinate
P. Scattergraph
Q. Statistical analysis
R. Vector graphic

1. A horizontal x-axis and a vertical y-axis are used to plot relative points on a particular plane.

2. A symbol used to represent a particular value plotted on a line graph, scattergraph or to represent certain tools, colors, or patterns.

3. It is plotted from a point to a specific distance and angle.

4. A paint tool used to zoom in on a particular part of a drawing so that individual pixels can be edited one at a time.

5. It is plotted to a change in the x- and y-axes from a previously drawn point.

6. It is drawn by mathematical algorithms in the computer.

7. The technique of using computers to prepare visual presentations of information.

8. Every individual pixel of the screen is treated as a separate memory position that represents a color or a shade of gray.

9. Usually attached below a graph to explain the significance of an icon, color, hatch pattern, or symbol.

10. Points that can be chosen from the x- and y-axes.

11. It frees the central processor from the task of computing information for the display monitor.

12. Analyzing past trends and events to predict future trends and events.

13. It is crucial to the editing process in CAD programs.

14. A series of points, plotted according to values on the x- and y-axes, that demonstrate an idea.

15. Programs used to illustrate information imported from business-related programs.

MATCHING 2

A. Animation
B. Array
C. Block
D. Chart
E. Cluster bar graph
F. Coordinate
G. Erase
H. Font
I. Free-drawing graphic
J. Gantt chart
K. Graphic legends
L. Lasso
M. Line graph
N. Optical mice
O. Pie graph
P. Resolution
Q. Stacked bar graph
R. Toolbox

1. A circle cut into sections that is usually used to represent parts of a whole expressed in percentages.

2. The screen area of a paint program that contains a selection of drawing tools used in the paint program.

3. A command that is used to repeat any drawing element or block.

4. A paint tool used to get rid of an image.

5. The number of dots used to make an image.

6. A very useful function that allows any part of a drawing to be moved to another place on the canvas.

7. Refers to a specific style of lettering.

8. A mathematically defined point.

9. Any part of a CAD drawing can be stored in the computer's memory and used again in other drawings that might call for the same element.

10. Paint and draw programs that do not require a specific structure for the information they illustrate.

11. A label attached to a graph which specifies the range of values of the graph.

12. It is used synonymously with graph.

13. A technique of recording graphics onto videotape, where they can be enhanced by objects moving on the screen.

14. A type of time schedule graph.

15. A type of graph in which bars represent the total value against time.

MATCHING 3

A. Area graph
B. Bullets
C. CAD
D. Column
E. Digitizing tablet
F. Grid line
G. Label
H. Layer
I. Line plot
J. Palette
K. Pixels
L. Plot
M. Rotate
N. Scrolling
O. Tick mark
P. X-axis
Q. Y-axis
R. Zoom

1. The computer screen is composed of many tiny dots of light.

2. This rectangle extends from the origin and often is used to plot values against time.

3. The symbols beside the lines in text charts that are used to give emphasis.

4. To assign a point a position according to the value the point represents in the chosen x- and y-scales.

5. A CAD command used to choose a small part, or window, of the larger drawing and expand that part until it takes up the entire screen.

6. The screen area of a paint program that contains the colors, shading, and patterns that may be used in the paint program.

7. The vertical axis of a graph that usually represents different values of the items being measured.

8. Similar to transparent sheets of paper on which different parts of the drawing are placed.

9. A paint tool used to get from one part of the canvas to another.

10. Used by architects and engineers to produce very accurate and highly detailed drafting of design work.

11. A pad with a puck that operates similarly to a mouse.

12. A unit of measure, smaller than a grid line, which is used to plot points.

13. A word or phrase that identifies values in a graph.

14. It is made up of lines connecting plotted points, or vertices, on the vertical and horizontal axes.

15. A line that runs horizontally and is used to mark units of measurement according to the values plotted on the x- and y-axes.

FILL IN THE BLANK

INSTRUCTIONS: Place the appropriate word or words in the blank.

____________________ 1. A(n) _________ is a word, number, or symbol that gives meaning to tick marks.

____________________ 2. A(n) _________ projector looks like a regular overhead projector, but it has a liquid crystal digital output device that converts digital signals into a transparent image that is projected onto a screen.

____________________ 3. A(n) _________ is an output device that uses a computer-controlled pen to draw images and is used exclusively for graphics.

____________________ 4. A(n) _________ laser printer uses a page-description language.

____________________ 5. _________ is a command used to draw squares, rectangles, or polygons of various shapes.

____________________ 6. The _________ is the drawing area in a paint program.

____________________ 7. _________ is a three-dimensional drawing of a manufactured object that is loaded into the computer.

____________________ 8. The _________ monochrome monitor brand graphics adapter provides a resolution of 752 by 350 lines in two colors.

____________________ 9. _________ is used to copy an exact, symmetrical duplicate of an object along a specified mirror line.

____________________ 10. _________ is a CAD command which is used to draw double lines of a specified length and width.

____________________ 11. A(n) _________ recorder is a device used to take a digital image and record that image directly onto film.

____________________ 12. The dot _________ represents characters by selecting certain dots out of an established matrix which is nine dots high and five dots wide.

____________________ 13. A(n) _________ output device includes monitors, LCD projectors, or other devices that display electronically without printing output on paper or film.

__________ 14. A(n) _________ plotter holds the paper flat on a horizontal surface and moves the pen in both directions.

__________ 15. _________ is a paint tool designed to imitate airbrushing techniques.

ESSAY

1. Discuss three different types of hardware that can be used for graphics.

   1)

   2)

   3)

2. Discuss four different computer graphics applications.

   1)

   2)

   3)

   4)

ANSWERS

True and False

1. T
2. T
3. F
4. F
5. T
6. F
7. T
8. T
9. T
10. F
11. T
12. F
13. F
14. T
15. T

Multiple Choice

1. C
2. A
3. B
4. C
5. A
6. B
7. C
8. D
9. C
10. A
11. B
12. D
13. A
14. B
15. D
16. C
17. D
18. A
19. B
20. C
21. C
22. B
23. D
24. A
25. C
26. B
27. A
28. D
29. B
30. D
31. A
32. B
33. D
34. C
35. D
36. B
37. A
38. D
39. A
40. B

Matching 1

1. C
2. H
3. M
4. E
5. O
6. R
7. D
8. B
9. I
10. A
11. G
12. Q
13. K
14. P
15. N

Matching 2

1. O
2. R
3. B
4. G
5. P
6. L
7. H
8. F
9. C
10. I
11. K
12. D
13. A
14. J
15. E

Matching 3

1. K
2. D
3. B
4. L
5. R
6. J
7. Q
8. H
9. N
10. C
11. E
12. O
13. G
14. I
15. F

Fill in the Blank

1. Tag
2. LCD-presentation
3. Plotter
4. Postscript
5. Solid
6. Canvas
7. CAM
8. Hercules
9. Mirror
10. Trace
11. Film
12. Matrix
13. Soft copy
14. Flatbed
15. Spray paint

Essay

1.-2. Evaluated to the satisfaction of the instructor.

TRUE AND FALSE

1. Desktop publishing is a euphemism for the combination of typesetting and the creation of professional quality pages for reproduction.
2. The term desktop publishing does not have any real meaning.
3. The primary goal of desktop publishing is to produce elaborate graphics.
4. Steven Jobs created the printing press.
5. Desktop publishing involves many specialists to do one job.
6. The Macintosh computer is the most flexible system to add additional equipment.
7. The Macintosh has "closed architecture," which means that all of the components are attached.
8. The ideal printer to use for desktop publishing is a laser printer.
9. The ideal monitor to use for desktop publishing is a CGA.
10. Software is considered the heart of a desktop publishing operation.
11. Pagemaker and Ventura are available for IBM computers only.
12. One of the disadvantages of using desktop publishing is that it involves a long learning curve for page layout programs.
13. Creativity is the basis for graphics layout and design.
14. Graphics should be used as often as possible to clutter the page because pictures are better than words.
15. Using style sheets saves repetitious effort.

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MULTIPLE CHOICE

1. Which of the following refers to software that is valuable in creating drawings or designs?

   A. Blueline. C. CAD.
   B. Bullets. D. Camera-ready art.

2. Which of the following is ready to be photographed by the printer?

   A. Blueline. C. CAD.
   B. Bullets. D. Camera-ready art.

3. Which of the following is a blocking or makeup tool used as a nonprinting guideline that does not appear in the final copy?

   A. Blueline. C. CAD.
   B. Bullets. D. Camera-ready art.

4. Which of the following is a term for small black circles or other characters used in the margin to call attention to a portion of text?

   A. Blueline. C. CAD.
   B. Bullets. D. Camera-ready art.

5. Which of the following is an on-screen graphic representation of a tool, file, or command?

   A. Font. C. Landscape.
   B. Icon. D. Mouse.

6. Which of the following is one of the many sizes and kinds of type that may be available for printing?

   A. Font. C. Landscape.
   B. Icon. D. Mouse.

7. Which of the following is a pointing device that lets the user move the cursor to select on-screen commands?

   A. Font. C. Landscape.
   B. Icon. D. Mouse.

8. Which of the following is a printing mode in which the text or image is viewed lengthwise on the page?

   A. Font. C. Landscape.
   B. Icon. D. Mouse.

9. Which of the following is a single dot on a computer screen?

   A. Page. C. Pica.
   B. Paste. D. Pixel.

10. Which of the following places an existing picture or section of text into an area on a page?

    A. Page. C. Pica.
    B. Paste. D. Pixel.

11. Which of the following is a unit of type measurement?

    A. Page. C. Pica.
    B. Paste. D. Pixel.

12. Which of the following is the portion of a document that will result in a single sheet of print?

    A. Page. C. Pica.
    B. Paste. D. Pixel.

13. Which of the following is a unit of measurement?

    A. Point. C. Resolution.
    B. PUB. D. Scanner.

14. Which of the following is a device that optically reads data or images via reflected light, and converts them into machine-readable information?

    A. Point. C. Resolution.
    B. PUB. D. Scanner.

15. Which of the following is the sharpness of an image on a screen or in printed form, measured in dots, spots, or lines per inch?

    A. Point. C. Resolution.
    B. PUB. D. Scanner.

16. Which of the following is the file extension used for publication files on PC and MS-DOS computers?

    A. Point.
    B. PUB.
    C. Resolution.
    D. Scanner.

17. Who created the printing press?

    A. Steven Jobs
    B. Gutenberg
    C. Plato
    D. H. Ross Perot

18. Which of the following is a not a characteristic of the Macintosh computer?

    A. It is considered a "turn-key solution."
    B. It is less flexible because hardware and software are limited.
    C. All of the components are designed to work together.
    D. It has an open architecture.

19. Which of the following has 720 x 348 dpi?

    A. CGA.
    B. EGA.
    C. Hercules.
    D. VGA.

20. Which of the following has at least 640 x 480 dpi?

    A. CGA.
    B. EGA.
    C. Hercules.
    D. VGA.

21. Which of the following has 640 x 200 dpi?

    A. CGA.
    B. EGA.
    C. Hercules.
    D. VGA.

22. Which of the following has 640 x 350 dpi?

    A. CGA.
    B. EGA.
    C. Hercules.
    D. VGA.

23. Which of the following is NOT a reason for selecting the correct word processing software for each specific desktop publishing software?

    A. The word processing software should be used to extend the options available with graphics.
    B. It must be compatible with the publishing system software.
    C. It is used to key and edit the desktop publishing document.
    D. It can be used for final output or to prepare copy for a page make-up program.

24. Which of the following is NOT a factor to consider before deciding if desktop publishing is needed?

A. Select a dealer who knows desktop publishing.
B. Get the equipment warranties in writing.
C. Select the largest and most powerful package available.
D. Evaluate needs to make sure that a desktop system is really needed.

25. Which of the following is NOT a benefit of desktop publishing?

A. Provides high-quality presentations.
B. Users have the expertise in layout and design.
C. Offers better workflow control.
D. Saves time, materials, and labor.

26. When planning a publication, which of the following would NOT be considered?

A. Graphic retrieval.
B. Emphasis.
C. Document appearance consistency.
D. The audience.

27. Which of the following would Newsroom be considered?

A. Bottom.
B. High end.
C. Low end.
D. Middle.

28. Which of the following would Publish It and First Publisher be considered?

A. Bottom.
B. High end.
C. Low end.
D. Middle.

29. Which of the following would Pagemaker or Ventura be considered?

A. Bottom.
B. High end.
C. Low end.
D. Middle.

30. Which of the following is NOT a characteristic of a grid system?

A. It ensures the consistent alignment of margins, headers, footers, and columns.
B. It is the underlying structure of a page layout.
C. It ensures that everything lines up.
D. The grid system is setup in the desktop publishing program.

MATCHING 1

A. Alignment
B. Bleed
C. Blueline
D. Camera-ready art
E. Clip art
F. Cropping
G. Desktop publishing
H. Dummy
I. Image
J. Kerning
K. Leading
L. Pitch
M. Portrait
N. Proof
O. Ragged
P. Scaling
Q. Style sheet
R. Typography

1. A mock layout showing placement of art and text.

2. The art and science of working with type elements.

3. The amount of vertical spacing, expressed in points between two lines of type.

4. Similar to justification, but more inclusive when working with multiple columns.

5. Cutting off parts of an image or drawing to make it fit, or to show only selected areas.

6. The normal printing mode in which text and images are viewed with the page oriented so that it is longer than it is wide.

7. The process of changing the size of an image, but not the proportions; it is also known as sizing.

8. A collection of handy drawings stored on disk that can be inserted on a document.

9. Text that is unevenly aligned on the left or right side of a column or page.

10. The size of typed characters being used.

11. A copy of a photograph or scanned document that is digitized and stored in memory or on disk.

12. The final copy of a document, including graphics.

13. Standard or designed layouts that can be saved on disk for use with any document.

14. The technique of extending art or text in any direction over the edge of a page.

15. Adjusting the spacing between certain letters.

MATCHING 2

A. Baseline
B. Border
C. Clipboard
D. Dialog box
E. Galley
F. Gray scale
G. Greeking
H. Grid
I. Landscape
J. Layout
K. Leaders
L. Pasteboard
M. Prompt
N. PUB
O. Rulers
P. Scanning
Q. Scroll bar
R. White space

1. The screen icon that informs the user that the system is waiting for a command.

2. The process of converting text to a digitized form and transmitting it to the computer.

3. A design template that divides a page with imaginary vertical and horizontal lines as an aid to placing and aligning type and graphic elements.

4. A typeset and formatted draft used for proofreading copy.

5. An area at an edge of the screen that can be used for controlling scrolling with a mouse.

6. The imaginary horizontal line on which characters in a line of type rest.

7. A graphic device which permits a command to be selected by using a mouse.

8. Representation of text by symbolic bars or boxes that shows position of the text but not the character.

9. Guidelines on the screen that aid in positioning text and pictures.

10. The planning and arrangement of text and graphics for a single page or an entire document.

11. The incremental range of intensity between pure black and pure white.

12. A work area that surrounds the page and is used to hold graphics and text during placement.

13. Dotted or dashed lines used to guide the reader's eyes across horizontal space.

14. A temporary storage place for text or graphics.

15. The blank or unused portions of a page.

FILL IN THE BLANK

INSTRUCTIONS: Place the appropriate word or words in the blank.

__________________ 1. Text recurring at the tops of pages in a document are _________.

__________________ 2. A(n) _________ is an area that can be moved around, placed on top of one another area, and removed without affecting the contents of other areas.

__________________ 3. A beginning line of type that is separated from the rest of the paragraph by a page break is a(n) _________.

__________________ 4. The _________ is the written element of a publication, including text, captions, and headlines.

__________________ 5. _________ is generally used to describe systems that display full pages of text and graphics on screen as they will appear on the final copy.

__________________ 6. _________ is the ability to enclose text around graphic images on a page layout.

__________________ 7. The _________ is a screen icon that moves in response to movement of the mouse.

__________________ 8. A ruler or linear design that surrounds any element of a page is the _________.

__________________ 9. The _________ is a resinous black powder that forms the ink of laser printers and many types of copier machines.

__________________ 10. _________ is a popular sans serif typeface that is also called Geneva.

__________________ 11. _________ is the technique of creating or editing a document by combining various texts and graphics.

__________________ 12. Pages of a document that are reproduced on one side of a sheet of paper are said to be _________.

__________________ 13. _________ is a feature that aids alignment by correctly breaking words that extend to another line.

__________________ 14. _________ is a slanted style of typeface.

__________________ 15. A(n) _________ is one or more lines of text that appears at the bottom of every page.

____________________ 16. The _________ is a particular design or style of type.

____________________ 17. _________ is the alignment of text at the right or left edge of a page or column.

____________________ 18. The overall layout of a printed page, including margins, columns, and type style and size is the _________.

____________________ 19. The _________ is the final line of a paragraph that is separated from the rest of the paragraph by a page break.

____________________ 20. A document that will be reproduced on both sides of a page is said to be _________.

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ESSAY

1. Discuss the capabilities of the desktop publishing software you are currently using.

2. Discuss the steps involved in designing the appearance of a document.

ACTIVITY

INSTRUCTIONS: Using your word processor, key in the essay answers and then connect it to a 2-column publishing document. Change the title fonts and adjust the layout. When you have completed the document, proofread and edit and then print a camera-ready copy for your instructor.

ANSWERS

True and False

1. T
2. T
3. F
4. F
5. F
6. F
7. T
8. T
9. F
10. T
11. F
12. T
13. F
14. F
15. T

Multiple Choice

1. C
2. D
3. A
4. B
5. B
6. A
7. D
8. C
9. D
10. B
11. C
12. A
13. A
14. D
15. C
16. B
17. B
18. D
19. C
20. D
21. A
22. B
23. A
24. C
25. B
26. A
27. C
28. D
29. B
30. D

Matching 1

1. H
2. R
3. K
4. A
5. F
6. M
7. P
8. E
9. O
10. L
11. I
12. N
13. Q
14. B
15. J

Matching 2

1. M
2. P
3. H
4. E
5. Q
6. A
7. D
8. G
9. O
10. J
11. F
12. L
13. K
14. C
15. R

Fill in the Blank

1. Headers
2. Window
3. Orphan
4. Copy
5. WYSIWYG
6. Wrap
7. Pointer
8. Border
9. Toner
10. Helvetica
11. Cut-and-paste
12. Single-sided
13. Hyphenation
14. Italic
15. Footer
16. Typeface
17. Justification
18. Format
19. Widow
20. Double-sided

Essay

1. Evaluated to the satisfaction of the instructor.

2. Evaluated to the satisfaction of the instructor. The following may be used as guidelines.

    1) Manuals included with the software give instructions on how to design a publication. Time spent with these lessons is quite worthwhile. There is no point in running the program until there is a design from which to work.

    2) Do not crowd the page; use a generous amount of white space to give the eye a rest.

    3) Do not allow objects to wander over the page.

    4) Graphics should be used in a purposeful manner; they should not clutter the page.

    5) Only the minimum number of fonts should be used on a page.

    6) Use lines or screens to differentiate parts of a page.

    7) Do not use text lines that are too long for the eye to follow.

    8) Think about what you want to do before doing it. Get ideas from other publications.

Activity

Evaluated to the satisfaction of the instructor.

TRUE AND FALSE

1. Utility programs slow down computers.
2. One of the purposes of using a print spooler is saving computer time when printing out long files.
3. RAM disks are defined as software that set aside part of the computer's memory for the storage of programs and data files.
4. Keyboard enhancers cannot customize IBM keyboards.
5. File-conversion programs convert files created on one program or operating system so that they can be run on another.
6. Project management is defined as the systematic overseeing of the progression of a project so that it is completed both on schedule and within the budget.
7. The critical path for projects only exists when a project is behind schedule or over the budget.
8. PERT charts use bars and a time line to illustrate the beginning and ending dates of each task making up the project.
9. Desktop managers can be defined as personal productivity tools.
10. The program Framework organizes and reorganizes frames in an outline, but it is not integrated.

MULTIPLE CHOICE

1. Which of the following is NOT a purpose of print spoolers?

   A. They allow the computer to do two things at the same time.
   B. They are used to save data on magnetic tape for mainframe computers.
   C. They save computer time when printing out long files.
   D. They designate part of the computer's memory as a print buffer.

2. Which of the following is NOT a characteristic of a disk-based program?

   A. The program never stops.
   B. Speed is increased.
   C. Only the core of the program is in memory the entire time.
   D. Only accesses the disk for overlays when they are needed.

3. Which of the following is NOT a characteristic of file-encryption programs?

   A. They are deemed important to those using hard-disk systems and on networks where a number of people have access to data files.
   B. U.S. Data Encryption Standard is primarily used on mainframes and sometimes on microcomputers.
   C. Encrypted data stored on disks or transmitted over telephone line cannot be retrieved by users without a password.
   D. Very few encryption systems are currently in use.

4. Which of the following can be defined as software that sets aside part of the computer's memory for the storage of programs and data files?

   A. Desktop managers.
   B. Idea processor.
   C. Project management.
   D. RAM disks.

5. Which of the following can be defined as the systematic overseeing of the progression of a project so that it is completed both on schedule and within the budget?

   A. Desktop managers.
   B. Idea processor.
   C. Project management.
   D. RAM disks.

6. Which of the following can be defined as a personal productivity tool?

   A. Desktop manager.
   B. Idea processor.
   C. Project management.
   D. RAM disk.

7. Which of the following can be defined as a program that helps to gather and organize ideas?

   A. Desktop manager.
   B. Idea processor.
   C. Project management.
   D. RAM disk.

8. Which of the following information would not be provided by a project management program?

   A. Personnel requirements and scheduling.
   B. Latest date a final decision can be made about a project.
   C. Detailed task breakdown.
   D. Best means of organization of the project steps and the staff needed to complete the stages.

9. Which of the following is NOT one of the three variables with which project management is concerned?

   A. Distribute detailed reports on job assignments.
   B. Break the project down into stages or tasks and key events, or milestones.
   C. Organize stages into a logical sequence, with a starting date and duration determined for each step.
   D. Calculate costs frequently related to when tasks are done and how long they take.

10. Which of the following statements is FALSE concerning the critical path of a project?

    A. All tasks are independent.
    B. The dependent tasks are laid out end to end.
    C. Know the sequence in which tasks must be completed and how long each one takes.
    D. Each subsequent task cannot begin until the previous one is complete.

11. Which of the following is a chart that shows the relationship of the individual task and milestones in a project and the flow of the project?

    A. Gantt chart.
    B. PERT chart.
    C. PROD chart.
    D. RAM chart.

12. Which of the following is a chart that uses bars and a time line to illustrate the beginning and ending dates of each task making up the project?

    A. Gantt chart.
    B. PERT chart.
    C. PROD chart.
    D. RAM chart.

13. Which of the following is NOT a procedure for desktop manager usage?

A. Operations of the other program are suspended when in the desktop manager.
B. Highlight the function on the menu, and press the return key.
C. The menu, which lists the available functions, can be displayed by pressing five to ten keys.
D. The program is loaded into the computer before loading other application programs.

14. Which of the following is NOT a common feature of desktop managers?

A. Notebooks to write brief notes.
B. Spreadsheet capabilities.
C. Calendars for scheduling meetings.
D. Phone directories to keep an updated list of phone numbers.

15. Which of the following is NOT an example of desktop manager software?

A. Apple Macintosh Desktop Accessories.
B. Deskmate.
C. Sidekick.
D. Helper.

FILL IN THE BLANK

INSTRUCTIONS: Place the appropriate word or words in the blank.

____________________ 1. Utility programs allow the computer to work __________ and more efficiently.

____________________ 2. When using a print spooler, the computer relays the data to the printer and returns the rest of the __________ to the control of the computer so that other files can be processed.

____________________ 3. When using RAM disks, if the computer is turned off, the data in the memory drive B is __________.

____________________ 4. Speed is __________ with RAM disks.

____________________ 5. Encryption systems can be hardware-based, __________-based or a combination of both.

____________________ 6. File-recovery programs restore files that have been inadvertently __________ from a disk.

____________________ 7. Traditionally, project planning has been time-consuming and expensive, especially when the schedule needs to be optimized or to explore __________ questions.

____________________ 8. __________ schedules or speeding up a project can be accomplished by changing the dates on the critical path.

____________________ 9. Some of the traditional methods of use for idea processors include generating, collecting, and __________ ideas.

____________________ 10. The first idea processor program was __________, which allowed ideas to be entered, moved, and inserted to reorganize them in outline form.

ESSAY

1. Discuss two different categories of productivity software.

2. Describe the procedures for loading, accessing, and using a productivity program that you are using.

ANSWERS

True and False

1. F
2. T
3. T
4. F
5. T
6. T
7. F
8. F
9. T
10. F

Multiple Choice

1. B
2. A
3. D
4. D
5. C
6. A
7. B
8. C
9. A
10. A
11. B
12. A
13. C
14. B
15. D

Fill in the Blank

1. Faster
2. Memory
3. Lost
4. Increased
5. Software
6. Deleted
7. What-if
8. Crashing
9. Organizing
10. Think Tank

Essay

1.-2. Evaluated to the satisfaction of the instructor.

COMPETENCY MATRIX OF TEST BANK QUESTIONS

SECTION V

SECTION V		QUESTION TYPES						
Unit	**Comp.**	**T/F**	**MC**	**Match 1**	**Match 2**	**Match 3**	**Fill-in**	**Essay**
1	1			All	All		All	
	2	1, 2	1-7					1
	3	3 – 7	8-1					
	4	8, 9	18-23					
	5	10, 11						
	6	12-16	24-30					
	7	17-20	31-35					2
2	1			All	All	All	All	
	2	1	1, 2					
	3	2, 5, 6	5-14					
	4	3	4					
	5	4	3, 15-24, 30-32					
	6	7, 9, 10	33-37					1
	7	8						2
	8		25-29					
	9	11-15	38-40					

SECTION V		QUESTION TYPES						
Unit	Comp.	T/F	MC	Match 1	Match 2	Match 3	Fill-in	Essay
3	1	1	1-16	All	All		All	
	2	2-4	17					
	3	5						
	4	6-9	18-22					
	5	10-12	23					1
	6	13-15	24-26					2
	7		27-30					
	8							
4	1	1					1	
	2	2-4	1-5				2-6	
	3	5						
	4	6-10	6-15				7-10	1
	5							2

Business Computer Applications I

Section VI

SOCIAL IMPLICATIONS OF COMPUTER USAGE

TEST BANK

TRUE AND FALSE

1. Our society is NOT dependent on computers.
2. Computers do less and less each year.
3. Our society is becoming a "nameless society" through the use of more computers and more numbers.
4. Artificial Intelligence is being used in robotics.
5. Robotics CANNOT be used on assembly lines.
6. CD-ROM is being used in libraries.
7. Hypergraphics is a method of teaching that involves both people and computers.
8. Computer viruses do NOT really exist.
9. A computer virus can destroy a computer system.
10. Computer crime involves ONLY viruses.
11. Computer crime is defined as breaking ONLY written laws.
12. Large corporations ALWAYS report computer crime.
13. Data spies normally only look at data and do NOT destroy the data.
14. Hackers are computer enthusiasts who normally only look at data.
15. Computer piracy involves illegally copying computer software.
16. Computer piracy does NOT break the copyright law.
17. Privacy is NOT an issue when discussing computer ethics.
18. Our nation currently has a giant data bank with everyone's name in it.
19. The paperless office means that everyone talks to one another rather than using paper documents.
20. Computer systems are ALWAYS reliable.

MULTIPLE CHOICE

1. Which of the following is a reason our society is becoming "nameless"?

   A. Credit cards.
   B. Driver's licenses.
   C. Social security numbers.
   D. All of the above.

2. Artificial Intelligence is being used in all of the following EXCEPT:

   A. Expert systems.
   B. Networks.
   C. Robotics.
   D. Decision support systems.

3. Which of the following is a robotic application?

   A. Warehousing.
   B. Handling radioactive materials.
   C. Mail carriers in large firms.
   D. All of the above.

4. Which of the following is NOT a characteristic of a computer CD-ROM?

   A. Plays music.
   B. Same size as a floppy disk.
   C. Stores files of historical material.
   D. Holds a gigabyte or more.

5. Which of the following is NOT a computer virus?

   A. Israeli virus.
   B. Alameda virus.
   C. American virus.
   D. Trojan Horse.

6. All of the following are reasons why computer crime is difficult to prosecute EXCEPT:

   A. The criminals are being hired as consultants.
   B. No laws exist.
   C. Large firms "hush up" the crime.
   D. Corporations do not want to lose their stockholders.

7. All of the following are types of computer crime EXCEPT:

   A. Loss of data.
   B. Piracy.
   C. Data spying.
   D. Hacking.

8. Which of the following is a FALSE statement concerning computer ethics?

   A. The copyright law does not cover computer software.
   B. Piracy has become a "big business."
   C. Viruses have been put on software programs to stop illegal copying.
   D. Software programs are easy to copy.

9. Which of the following is NOT a privacy issue?

A. Control over the data is lost.
B. Private information can be read by anyone who has access to it.
C. No one else can look at computer data except the person receiving the information.
D. Paper documents can be locked away, but electronic data cannot.

10. Which of the following is NOT performed by credit bureaus?

A. Keep up-to-date records.
B. Gather data from many sources.
C. Both A and B.
D. None of the above.

11. In a paperless office, which of the following is a method of security?

A. Encryption.
B. Hacking.
C. Piracy.
D. Data spying.

12. The reliability of computer systems involves:

A. Hardware.
B. People.
C. Software.
D. All of the above.

13. Which of the following is the BEST method of preventing loss of data?

A. Maintenance.
B. Backup information.
C. Equipment replacement.
D. None of the above.

14. Which of the following statements about computer software is TRUE?

A. Programs never have bugs.
B. Programs seldom run.
C. Programs always have bugs.
D. None of the above.

15. Which of the following is a type of storage media?

A. Magnetic tape.
B. Hard disks.
C. Floppy disks.
D. All of the above.

16. Which of the following is NOT a characteristic of the Pakistani Brain virus?

A. It infects any .COM or .EXE program.
B. Adds seven sectors which contain the remainder of the virus.
C. Flags all modified sectors as unusable to protect itself.
D. Replicates onto all inserted bootable floppies.

17. Which of the following is NOT a characteristic of the Scores virus?

    A. Increases application size by 7000 bytes.
    B. Creates invisible Scores and Desktop files.
    C. Replaces original boot sector with itself.
    D. Looks for existence of specific file names for destruction.

18. Which of the following is NOT a characteristic of the Israeli virus?

    A. Programs are infected when they are executed in the infected system.
    B. Infects the boot sector.
    C. Floppy or hard disks can become infected.
    D. Seeks out new hosts at 3 1/2-minute intervals.

19. Which of the following is NOT a characteristic of the nVIR virus?

    A. Infects the COMMAND.COM file only.
    B. Appears in many different varieties.
    C. Once a system is infected, every application executed is infected.
    D. Each variety has its own individual activation characteristics.

20. Which of the following is NOT a characteristic of the Alameda virus?

    A. Replaces the original boot sector with itself.
    B. Infects through software re-boot sequence.
    C. Stores the original boot sector on the first free sector.
    D. The original boot sector is flagged as unusable.

21. Which of the following is NOT a characteristic of the Lehigh virus?

    A. Changes creation date and time.
    B. Activates after ten infections.
    C. Infects COMMAND.COM file.
    D. Destroys all system data.

22. Which of the following is a characteristic of the datacrime virus?

    A. Infects the COMMAND.COM file.
    B. Replaces the original boot sector.
    C. Breaks down the directory section.
    D. Infects any .COM or .EXE program.

23. Which of the following checks for a certain action such as checking the infected program for a preset number of executions?

    A. Time Bomb virus.
    B. Trojan Horse.
    C. Logic Bomb virus.
    D. Trap Door.

24. Which of the following checks for a specific date or time such as Friday the 13th before executing its objective?

A. Time Bomb virus.
B. Trojan Horse.
C. Logic Bomb virus.
D. Trap Door.

25. Which of the following is a programmer's placement of unauthorized instruction in a computer operating system for future use in gaining access to restricted information?

A. Peace virus.
B. Trojan Horse.
C. Logic Bomb virus.
D. Trap Door.

26. Which of the following is a segment of code that allows data to be transmitted to the legitimate operator while other data are transferred to an illegal operator?

A. Peace virus.
B. Trojan Horse.
C. Logic Bomb virus.
D. Trap Door.

27. Which of the following is a type of virus that was created to spread a greeting and then erase its own instructions, disappearing without a trace?

A. Peace virus.
B. Trojan Horse.
C. Logic Bomb virus.
D. Trap Door.

28. Which of the following is NOT a characteristic of a network worm?

A. Attacks systems that are linked via communication lines.
B. Destroys the boot sector.
C. May be found in programs that use network connections.
D. May behave like a virus or it can plant a virus.

29. Which of the following viruses do NOT attack IBM or IBM-compatible computer systems?

A. nVIR virus.
B. Pakistani Brain virus.
C. Israeli virus.
D. Alameda virus.

30. Which of the following viruses attack a Macintosh computer system?

A. Lehigh virus
B. Datacrime virus.
C. Scores virus.
D. Peace virus.

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MATCHING 1

A. Activation
B. Activation period
C. Artificial Intelligence
D. CD-ROM
E. Computer crime
F. Computer ethics
G. Data spying
H. Decision support system
I. Encryption
J. Expert system
K. Hacker
L. Host program
M. Hypergraphics
N. Infection
O. Isolation
P. Piracy
Q. Robotics
R. Viral variety

1. The science that deals with robots, their construction, capabilities, and applications.

2. The invasion of a virus into a host system.

3. The unauthorized copying of a computer program written by someone else.

4. A term describing data that has been translated into a secret code for security reasons.

5. A form of illegal access to data.

6. Any illegal act for which knowledge of computer technology is used to commit the offense.

7. The final phase of the virus life cycle.

8. A program that mimics the decision-making logic of human experts.

9. A method used in classrooms or in-service training that involves the participants, the teacher, and the computer through the use of a response pad and an interconnection box.

10. A field of study involving techniques under which computers can formulate responses on the basis of content of accumulated and experience-related information.

11. A term used to describe computer enthusiasts who are challenged by the practice of breaking computer security measures designed to prevent unauthorized access to a particular computer system.

12. An information-producing system aimed at a particular decision a manager must make.

13. A term used to refer to the standard of moral conduct in computer use.

14. The process a virus uses to identify and distinguish itself from its host program.

15. The current compact disks for computers, similar to read-only memory.

MATCHING 2

A. Alameda virus
B. Computer virus
C. Datacrime
D. Hidden virus
E. Israeli virus
F. Lehigh virus
G. Logic Bomb
H. Network worms
I. nVIR
J. Pakistani Brain virus
K. Peace virus
L. Replication
M. Scores virus
N. Time Bomb
O. Trap Door
P. Trojan Horse
Q. Vaccine
R. Virus remnant

1. A program that watches for typical things viruses do, halts them and then warns the computer operator.

2. A virus that breaks down the directory section, making it impossible for the disk's contents to be read.

3. Replaces the original boot sector with itself; causes loss of data.

4. A segment of code that allows data to be transmitted to the legitimate operator while other data are transferred to an illegal operator.

5. A virus that leaves no external signs of its presence after infection.

6. A virus that checks for a certain action, as if an infected program has been executed a preset number of times.

7. Infects any application; loss of data due to system crashes.

8. A segment of machine-language code that replaces software or data with a copy of itself without authorization.

9. A virus that checks for a specific date or time before executing its objective.

10. Infects any .COM or .EXE program; some versions destroy all data on the hard disk; stored programs will disappear.

11. Appears in many different varieties, each with its own individual activation characteristics.

12. Infects COMMAND.COM file; causes loss of all data on the hard disk.

13. Replaces original boot sector with itself; system crash can cause loss of data; spreads quickly to all bootable disks.

14. A programmer's placement of unauthorized instructions in a computer operating system for future use in gaining access to restricted information.

15. A type of virus that was created to spread a greeting of world peace and then erases its own instructions, disappearing without a trace.

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FILL IN THE BLANK

INSTRUCTIONS: Place the appropriate word or words in the blank.

____________________ 1. ________ crime is any illegal act for which knowledge of computer technology is used to commit the offense.

____________________ 2. A computer _________ is a segment of machine-language code that replaces software or data with a copy of itself without authorization.

____________________ 3. A(n) __________ is a person who is challenged by trying to break computer security.

____________________ 4. The ________ virus leaves no external signs of its presence after infection.

____________________ 5. The ________ office implies that most paper documents have been replaced by electronic devices.

____________________ 6. If all those living in a society are known by a number, the society is said to be ________.

____________________ 7. Hypergraphics can be used in a(n) ________ or as a training device.

____________________ 8. The improper care of equipment and disks can cause serious problems, such as loss of ________.

____________________ 9. Private or secret data should always be kept _______.

____________________ 10. The number one cause of data loss is ________.

ESSAY

1. List two types of computer viruses and give a brief description of each.

(1)

(2)

2. In your opinion, how could the reliability of computer systems be increased?

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ANSWERS

True and False

1. F
2. F
3. T
4. T
5. F
6. T
7. T
8. F
9. T
10. F
11. F
12. F
13. T
14. F
15. T
16. F
17. F
18. F
19. F
20. F

Multiple Choice

1. D
2. B
3. D
4. A
5. C
6. B
7. A
8. A
9. C
10. C
11. A
12. D
13. B
14. C
15. D
16. A
17. C
18. B
19. A
20. D
21. B
22. C
23. C
24. A
25. B
26. D
27. A
28. B
29. A
30. C

Matching 1

1. Q
2. N
3. P
4. I
5. G
6. E
7. A
8. J
9. M
10. C
11. K
12. H
13. F
14. O
15. D

Matching 2

1. Q
2. C
3. A
4. O
5. D
6. G
7. M
8. B
9. N
10. E
11. I
12. F
13. J
14. P
15. K

Fill in the Blank

1. Computer
2. Virus
3. Hacker
4. Hidden
5. Paperless
6. Nameless
7. Classroom
8. Data
9. Confidential
10. Carelessness

Essay

1. Any two of the following may be chosen. The descriptions are to be evaluated to the satisfaction of the instructor.

    1) Pakistani Brain
    2) Scores
    3) Israeli
    4) nVIR
    5) Alameda
    6) Lehigh
    7) Datacrime
    8) Logic Bomb
    9) Network worms
    10) Time Bomb
    11) Trojan Horse
    12) Trap Door
    13) Peace
    14) Others discussed

2. Evaluated to the satisfaction of the instructor.

COMPETENCY MATRIX
OF TEST BANK QUESTIONS
SECTION VI

SECTION VI		QUESTION TYPES					
Unit	Comp.	T/F	MC	Match 1	Match 2	Fill-in	Essay
1	1			All	All	1-5	
	2	1-9	1-5, 16-30			6, 7	1
	3	10-16	6-8			9	
	4	17-19	9-11				
	5	20	12-15			8, 10	2

COMPLIANCE STATEMENT

TITLE VI, CIVIL RIGHTS ACT OF 1964; THE MODIFIED COURT ORDER, CIVIL ACTION 5281, FEDERAL DISTRICT COURT, EASTERN DISTRICT OF TEXAS, TYLER DIVISION

Reviews of local education agencies pertaining to compliance with Title VI Civil Rights Act of 1964 and with specific requirements of the Modified Court Order, Civil Action No. 5281, Federal District Court, Eastern District of Texas, Tyler Division are conducted periodically by staff representatives of the Texas Education Agency. These reviews cover at least the following policies and practices:

(1) acceptance policies on student transfers from other school districts;

(2) operation of school bus routes or runs on a non-segregated basis;

(3) nondiscrimination in extracurricular activities and the use of school facilities;

(4) nondiscriminatory practices in the hiring, assigning, promoting, paying, demoting, reassigning, or dismissing of faculty and staff members who work with children;

(5) enrollment and assignment of students without discrimination on the basis of race, color, or national origin;

(6) nondiscriminatory practices relating to the use of a student's first language; and

(7) evidence of published procedures for hearing complaints and grievances.

In addition to conducting reviews, the Texas Education Agency staff representatives check complaints of discrimination made by a citizen or citizens residing in a school district where it is alleged discriminatory practices have occurred or are occurring.

Where a violation of Title VI of the Civil Rights Act is found, the findings are reported to the Officer for Civil Rights, Department of Health, Education and Welfare.

If there is a direct violation of the Court Order in Civil Action No. 5281 that cannot be cleared through negotiations, the sanctions required by the Court Order are applied.

TITLE VII, CIVIL RIGHTS ACT OF 1964; EXECUTIVE ORDERS 11246 AND 11375; TITLE IX, 1973 EDUCATION AMENDMENTS; REHABILITATION ACT OF 1973 AS AMENDED; 1974 AMENDMENTS TO THE WAGE-HOUR LAW EXPANDING THE AGE DISCRIMINATION IN EMPLOYMENT ACT OF 1967; AND VIETNAM ERA VETERANS READJUSTMENT ASSISTANCE ACT OF 1972 AS AMENDED IN 1974.

It is the policy of the Texas Education Agency to comply fully with the nondiscrimination provisions of all federal and state laws and regulations by assuring that no person shall be excluded from consideration for recruitment, selection, appointment, training, promotion, retention, or any other personnel action, or be denied any benefits or participation in any programs or activities which it operates on the grounds of race, religion, color, national origin, sex, handicap, age, or veteran status (except where age, sex, or handicap constitute a bona fide occupational qualification necessary to proper and efficient administration). The Texas Education Agency makes positive efforts to employ and advance in employment all protected groups.